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ON THE

INDIAN OPERATION OF COUCHING FOR CATARACT.

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(*Concluded from p. 330.*)

THE CHAMBERS OF THE EYE.

The Anterior Chamber.

THIS chamber showed departures from the normal in different directions. These will be dealt with under separate headings.

1. *Scantiness of contents.*—One chamber was quite empty, due to the presence of a corneal fistula. (*Vide* Fig. 14.) In a number of cases the chamber was greatly shallowed, owing to the encroachment of the vitreous body upon it. In these the filtering angle was sealed by adhesion over a wide area. In a few cases *l'iris bombé* was responsible for the shallowing of the chamber. (Fig. 22.) In yet others a severe plastic inflammation had involved the structures, lying in and posterior to the aqueous chamber, and had matted them to the posterior surface of the cornea, thus almost obliterating the cavity. This union had been so strong that in the process of hardening the membrane of Descemet remained adherent to the organised exudate beneath it, and a spurious chamber was thus formed lying in the substance of the cornea.

2. *Hypopyon* was present in 6 specimens, and in 1 the pus was mixed with blood. The length of histories in these cases varied from a matter of months up to 20 years.

3. *Hyphæma*.—Blood was present in the anterior chamber in 9 specimens. In some of them it was fresh, whilst in others it was altered and decolourised. The long histories given by a number of these cases suggest either that there had been some recent cause for hæmorrhage, or else that a leakage of blood had been constantly occurring. In 2 of the eyes the iris had been torn; in every one of the others there was evidence that severe iritis had been present.

4. *Vitreous in the anterior chamber.*—In 4 eyeballs the aqueous and vitreous cavities appear to have been in free communication with each other, and filaments of the vitreous body can be traced into the anterior chamber. In 2 of these the angle was widely open, and in the other 2 it was closed by irido-corneal adhesions.

5. *Lens matter in the chamber* (*Vide* Figs. 3, 4, and 5).—In four eyes lens matter was found in the *anterior* chamber. In one the history showed that a nucleus had passed freely backwards and forwards between the two chambers. In another a Morgagnian cataract was wedged in the angle of the chamber, but had contracted no adhesions; in the remaining two the nuclear masses were firmly fixed in position by an abundant quantity of exudate.

6. *Albuminous exudates in the anterior chamber.*—These were found in three cases; few or no structural elements were present; during life the contents of the chamber were fluid, but they had coagulated under the influence of the formalin preparation of the specimens; they were probably derived from the iris and ciliary body.

The Vitreous Chamber.

In the great majority of the eyeballs under examination it was observed that the vitreous body had become detached and shrunken, and that its remnants showed distinct signs of infiltration and often of organisation. The appearances observed in the various cases fall naturally under a number of headings. 1. Very slight evidence of vitreous structure is discernible. (*Vide* Fig. 6.) 2. Filmy masses are present in the chamber. (*Vide* Fig. 7.) These either (*a*) are confined to the anterior portion of the chamber, or (*b*) take the form of a cone with its apex at the nerve head, and its base in the neighbourhood of the ora serrata and ciliary body. 3. Masses are present which give the impression of being freely infiltrated with inflammatory material (*vide* Fig. 8), either throughout their substance or in isolated foci; these may be divided into the same subgroups, (*a*) and (*b*), as those under the previous heading. 4. A distinct fibrous organisation is noticeable in the conical masses, which represent the detached and shrunken vitreous. (*Vide* Fig. 9.) 5. No detail is discernible (*vide* Fig. 11) owing to the fact that the retina has became detached and inextricably matted with the one time vitreous contents, and with the iris and ciliary body.

There are certain preliminary points which we must first settle. 1. There is no essential difference between the cases in which there is a definite cone of filmy or infiltrated membrane reaching from the optic nerve head to the ciliary body, and those in which deposits of a similar nature are found confined to the anterior portion of the vitreous chamber. The grounds for this statement are as follows: (*a*) An examination of the more complete specimens of conical exudate shows that the membrane becomes very slender as the nerve head is approached, and it is obvious that very little violence would be required to break this delicate thread across, and so to allow the whole membrane to be gathered up by its own elasticity towards its large and strong anterior attachments. (*b*) There is strong evidence in a number of the specimens of this series to show that the contraction of the shrinking inflammatory material within the globes takes place with such force as might easily suffice to break across the slender nerve attachment of some of these cones. (*c*) It is obvious that in not a few cases the tapering apex of a conical exudate is likely to be cut across during section of the globe or broken across during subsequent manipulations. (*d*) Specimens, in which the exudates presented a definite conical shape, when they were first cut in India, have arrived in this country transformed during the voyage into the similitude of those, in which this exudate is loosely gathered into the fore part of the vitreous chamber; the apex of the cone had been broken off at the nerve head, and the exudate had moved forward by virtue of its own elasticity toward the anterior attachments of the mass. Taking all these points into consideration, we may conclude that in all the eyeballs which present the appearance of shrunken vitreous the structure was originally conical in form and that departures from that shape are merely artefacts. Stress is laid on this point, because in a number of the globes the appearances present suggest that the exudate is poured out from the ciliary body and is confined to the neighbourhood of that structure. We believe such interpretation to be quite erroneous and to be founded on the observation of artefacts.

2. Is this appearance of a shrunken vitreous body definitely pathological? The answer is in the affirmative, for the following reasons: (*a*) All these globes were treated alike, being dropped into 5 per cent. formalin solution on removal and kept there till frozen and cut. (*b*) Normal eyeballs treated in this way present no such evidence of definite vitreous structure. (*c*) Every grade can be traced in the series before us, between the appearance of delicate filmy membranes in the vitreous, and the presence of firmly organised structures. (*d*) Though it is very difficult to examine these exudates satisfactorily under the microscope, there are a large number of specimens which definitely show evidence of an inflammatory exudation, strengthening and thickening the vitreous body. In not a few of these the anterior hyaloid membrane (the term is used in a non-committal sense) is definitely thickened and infiltrated with inflammatory material. (*Vide* Fig. 12.) The conclusion arrived at is that these widely varying evidences of structural alteration in the vitreous body, are to be interpreted as due to the penetration of the hyaloid by inflammatory material of chemotaxic origin, and to the subsequent organisation of that infiltration. (*e*) There still remains the clinical evidence. The lecturer was increasingly reluctant, as his Indian experience accumulated, to remove lenses which had been couched. It was not that vitreous escaped, but that the results of operation were usually poor, and that the blame of the lost sight was then apt to be most unfairly ascribed to the extraction operation. In view of the frequent occurrence of vitreous changes this failure to help the patients is easily explained. Major Kirkpatrick has taken a different, and possibly a more generous, view of the situation, and has removed a number of these couched lenses; his evidence is of extreme interest in the light of our recent pathological findings; he has been "struck by the rarity of vitreous

escape even after a fairly extensive investigation with a spoon" in extracting a couched lens. He adds:

"I have noticed that the vitreous body becomes shrunken and extraordinarily tough, so much so that when an eye is excised (either for glaucoma or for irido-cyclitis following Mahomedan operation) the whole globe can be held up by a strabismus hook transfixing the vitreous, though the latter appears perfectly clear. The vitreous undoubtedly does undergo shrinkage, and leaves a large space, which is occupied by aqueous."

Straub[1] has described some experiments which he made on animals, in the course of which he injected pathogenic organisms either into the vitreous or into the ciliary body; the result varied according to the part infected, and the poisoned area attracted leucocytes by chemotaxis to itself. Particular interest attaches to the following of his findings: (1) The optic nerve head was swollen and filled up with leucocytes; (2) there was evidence "that the lymph current of the vitreous goes by the optic nerve and that chemotaxic substances are brought by this current from the granuloma (the artificial infection) to the nerve"; (3) the leucocytes found in the vitreous showed the way from the granuloma to the cup of the optic nerve—they were seated on thin membranes and most of them were heaped together in small dots; (4) aggregations were found on the walls of the cavities of the eye (on the cornea, on the retina, on the lens capsule, &c.), attracted there, in Straub's opinion, by a chemotaxic action.

In the experiments above considered, which were very limited in number, an effort was made to localise the infection to one or other part of the eye and to work with a virus (tubercle bacilli) which was comparatively constant in its toxicity.

What Straub did with a few eyes has been done in the series now before us by the Indian coucher in 54. The interest of the experiments is heightened by the fact that whereas in the Dutch experiments the toxicity of the virus was kept as constant as possible, in the Indian ones it varied from that of organisms which took many years to destroy the sight to that of those which at once produced a fulminating panophthalmitis. One point more—the Indian operator made no effort to confine his procedure (and with that procedure went infection) to any one structure; sometimes he attacked the lens from in front, and in doing so he often primarily injured the iris but may have spared the vitreous chamber; sometimes he entered through the ciliary body or through the choroid, opening up the hyaloid cavity in doing so. His want of skill and the slenderness of his anatomical knowledge made him catholic in the damage he inflicted, but running through his work is the trail of septic infection of the eyeball by penetrating wounds. The result is that he has provided us with a large material of extraordinary interest in the study of the problem which Straub started on.

The filmy masses in the vitreous chamber.—As has already been stated, the contents of the vitreous chamber in these specimens vary from thin gauzy films, which can only be detected by careful search, up to thick masses which strike the eye as soon as the specimen is looked at

It is not easy to obtain a view of these exudates in section, but nevertheless they appear in a considerable number of the microscopic specimens and their character is always the same; they consist of a more or less structureless mass with blood cells and leucocytes embedded in its substance. In fact, they would seem to be identical with the membrane spoken of by Straub as harbouring the leucocytes which give rise to dust-like and other opacities of the vitreous in his experimental cases. At a later stage, or perhaps in cases where the inflammation has been of a more plastic character, a distinct fibrillation of the exudate can be seen, and there may even be evidence of a definite fibrous tissue formation. If we confine our attention for the moment to the eyeballs in which the exuded mass is devoid of structure in the anterior portion of the cone we shall find that, on tracing it back toward the apex by which it is attached to the optic nerve, it becomes more highly organised and more richly cellular, whilst fibrillation and fibrous tissue formation make their appearance. The same thing, though in a lesser degree, may be observed in the neighbourhood of the ciliary body, doubtless due to the presence of a plastic exudate derived from that structure.

An examination of the optic nerve and of the exudate attached to it reveals the following features: 1. The nerve head is congested and its vessels stand out in prominent relief. 2. There is a considerable effusion of leucocytes in the neighbourhood of these vessels. 3. A mass of exudate fills up and projects from the optic nerve cup, whether this latter is physiological or glaucomatous. This mass is clearly contracting, and thereby pulling on the tissue which lines the edges of the cup. 4. Along the centre of the projecting exudate are to be seen (*a*) an abundance of mononuclear cells; (*b*) the commencement of a fibrous tissue formation; and (*c*) a new formation of blood-vessels.

The appearances above enumerated would indicate that we have to do with an inflammation of the optic nerve, which had been induced by chemotaxic substances brought thither along Stilling's canal. Such an idea is not a new one. It was suggested by Straub in order to explain the optic neuritis he found in his two cases of experimental inoculations of the ciliary body, and it also enjoys provisionally the support of Fuchs's[2] authority. The idea that part of the lymph of the eye passes backward along a passage corresponding to the central hyaloid canal is not generally accepted, and rests largely on inference from the observation of pathological specimens. It would be difficult, however, for anyone who has carefully studied this series to doubt that such a flow exists; it is, of course, not suggested that any large percentage of the lymph travels in this direction.

A confirmation of these views is obtained if we refer to the three eyeballs in which the organisation of the cone of exudate into the vitreous has attained the highest development. We notice in these how extremely far this process of organisation has been carried in the apex of the cone, where it is represented as a well-defined opaque cord. (Fig. 23, No. 199, *vide* also Fig. 9.) In one of the three a fibrous band, presumably the remains of the canal of Stilling, is clearly seen, whilst in the two others the existence of this structure is at least indicated. It is possible that in the first named a congenital peculiarity exaggerated the distinctness of the appearance.

THE RETINA.

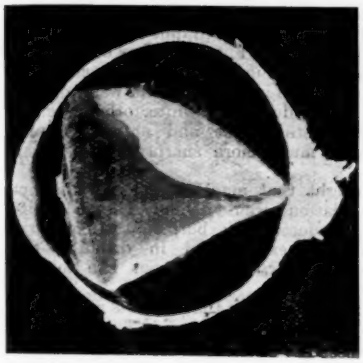
Detachment of the retina occurred in 38 of the 54 globes (70·38 per cent.) and was absent in 16 (29·62 per cent.). It was partial and ill-marked in 5 (9·25 per cent.), extensive in 9 (16·68 per cent.), and complete in 24 (44·44 per cent.). The ocular tension was above normal in 11 out of the 16, which presented no detachment, but in only 6 out of the remaining 38; it was below the normal in 13 of the 24 globes with complete detachment, and above it in 3 of them. In the very great majority of the eyes the detachment of the retina was undoubtedly due to traction from within. The sequence of events is plain from a study of the whole series.

At the operation there was an infection of the coats of the eye and also of the vitreous chamber from without; this led to the formation of inflammatory material within the vitreous chamber; adhesions took place between these newformed membranes and the retina; finally the shrinkage of the organising inflammatory material tore the retina from its bed. Every step of the process can be traced either in microscopic sections or in the naked-eye specimens. The earliest possible stage is seen under the microscope in sections of an eyeball (No. 37), where in the neighbourhood of the ora serrata the shrinkage of the exudate within the vitreous chamber has just begun to lift the retina from its bed. The individual points of attachment between the inflammatory membrane and the retina are beautifully illustrated. The ultimate stage of the process is to be found in those cases in which the retina is not merely totally detached but has shrunk posteriorly into a stick-like form (*vide* Fig. 16), whilst it opens out anteriorly into a mass, in which the iris, the ciliary body, the lens, the remains of the vitreous, and the retina are inextricably matted and tangled. When sections of such specimens are examined under the microscope their leading feature is the evidence of severe plastic irido-cyclitis, with the formation of abundant cicatricial tissue, which mats all the parts together and severely distorts the normal anatomical arrangement. The retina is dragged forward from the neighbourhood of the ora serrata over the ciliary body, whilst elsewhere it is thrown into abundant folds and completely separated from its normal attachments. A pseudo-cystic condition is thus produced, the apparent cysts being formed by the elaborate folding of the membrane. (*Vide* Figs. 11 and 21.) These may be small and slit-like, or may be large and round, so simulating the appearance of true cysts. In front of the retinal mass lens fragments and capsule are seen in a number of the specimens entangled in

[1] The Pathology of Dust-like Bodies in the Vitreous, &c., Trans. of the Ophthalmological Society of the United Kingdom, 1912, xxxii., 60.

[2] Fuchs: Textbook of Ophthalmology, Duane, fourth edition, 1911, p. 16.

FIG. 22.

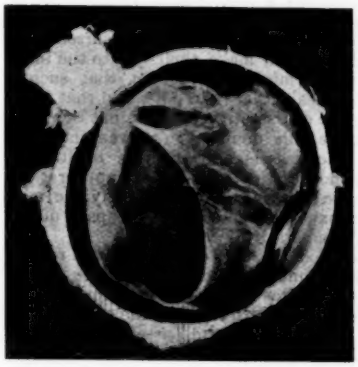


Upper half, left eye. (111.)

the scar tissue. As has already been said, all grades can be traced from the slightest detachments up to those we have just been describing. The greater or less degree of separation of the retina met with in the different globes is doubtless in part a question of time, but it is also, and probably to a much larger extent, one of the character and grade of the inflammatory process excited in the eyeball. The more plastic the type of inflammation and the more intense the process is, the greater will be the measure of ultimate cicatrisation, always provided that the inflammation is not intense enough to result in suppuration.

There are several different ways in which the exudate which forms within the vitreous chamber may be placed in a favourable position for the production of retinal detachment.

FIG. 23.



Right eye, lower half. (199.)

1. The first of these is illustrated by each of those globes (Nos. 44 and 72) in which the site of a wound of the retina forms the point of connexion between that membrane and the inflammatory exudate lying in the vitreous cavity. (*Vide* Fig. 20.) The traumatic infection of the retina served to attach the vitreous exudate to its walls, and thus paved the way for the separation of the membrane. In one of these cases (No. 44) a longitudinal fold was detached, whilst in the other (No. 72) the detachment was broad and shallow.

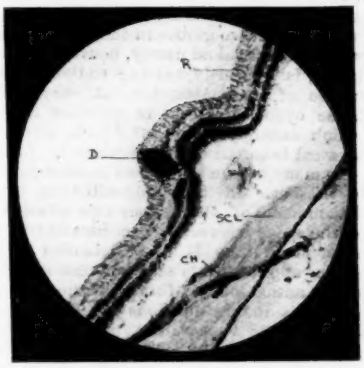
2. In the second method also it is necessary to postulate an infection of the retina before that membrane could have contracted adhesions, either localised or widespread, to the neighbouring vitreous exudate. Once, however, the virus was planted within the hyaloid chamber, it probably diffused itself widely, and by means of chemotaxis set up an inflammation of the retina; evidences of such a retinitis abound in many of the specimens. Attachments between the vitreous exudate and the retina having been thus formed, the contraction of the former would naturally lead to the separation of the latter from its choroidal bed.

FIG. 24.

Left eye, lower half. (240.)

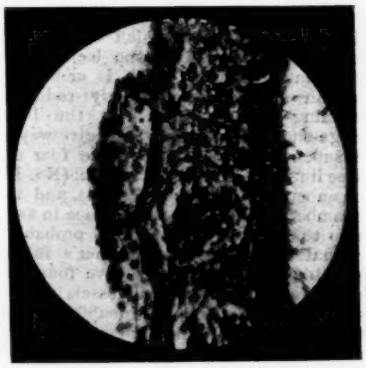
3. In a few of the globes the contracting membrane is merely an infiltration and thickening of the anterior layer of the hyaloid. It is well known that the vitreous body is, under normal conditions, more firmly attached to the retina in the neighbourhood of the ora serrata than it is elsewhere; it is therefore obvious that an inflammatory contracting membrane in the anterior part of the vitreous will pull throughout its whole circumference on the retina in its neighbourhood, effecting a detachment over a very wide area. (*Vide* Fig. 12.) This is just what we see happening in the globes we are now discussing.

FIG. 25.



Proliferative dot in retina. R, retina; SCL, sclera; CH, choroid; D, mass of leucocytes surrounding vessel wall. (175.)

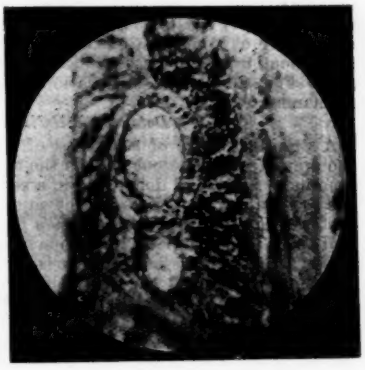
FIG. 26.



Collection of leucocytes on inner surface of retina. (37.)

4. In a number of the specimens it can be clearly seen that the bands, which drag upon the retina, radiate from the remains of lens masses, which are themselves encased in inflammatory tissue, and are bound thereby to the iris and ciliary body in their neighbourhood. Such bands appear in some cases to lie in the substance of the retina itself (*vide* Fig. 15); in others they are situate in the vitreous and present the form of membranous sheets, separated from the subjacent retina only by narrow spaces, and finding attachment to it in the neighbourhood of the equator. (Nos. 117 and 170.) The characteristic of these cases would appear to be that the dislocated lens is in them the principal focus of sepsis within the eye. The point is of interest since some of them, at least, represent ruptured Morgagnian cataracts, for the lecturer has reason to believe, on clinical

FIG. 27.



Cysts in retina. (111.)

grounds, that the liberation of Morgagnian fluid within the eye is sometimes, at least, productive of considerable irritation to the surrounding parts.

There are two globes in the collection in which the exudate within the hyaloid cavity, converted into organised fibrous tissue, is obviously tearing the retina from its bed in the course of its contraction. A very interesting feature of these eyeballs is that in each of them an opaque band which strongly suggests Stilling's canal can be traced forward from the optic nerve head. (*Vide* Fig. 23.)

In many of the specimens an abundant subretinal exudate is present. In the long-standing ones, with complete detachment of the retina, this effusion fills up the whole of the space between the retina and the choroid. When the latter membrane is also detached a further exudate of similar appearance is seen between it and the sclera. Owing to the action of the formalin, the very firm coagulation of the long-standing effusions gives the eyes a solid and very characteristic appearance (*vide* Fig. 11); the half globes look like sections of marbles made of fissured and clouded glass. In earlier cases the effused mass is much less firm, but is whiter and more opaque, with a tendency to present a flocculent appearance. The question that naturally presents itself is, whether these effusions were the cause or the result of the retinal detachment. The presence of the inflammatory exudate within the vitreous, with which we have already dealt, provides such a satisfactory explanation of the detachments of the retina throughout this series, that it seems unlikely that the effusions in question, whether subretinal or subchoroidal, play any causative part whatever.

We must place in quite a different category the cases, four in number, in which the effused fluid consisted of blood. The source of the hæmorrhage in these cases is different from that which is met with when the pressure within an eye is suddenly reduced by the operative opening of the globe. In the latter case it is the large choroidal vessels which give way and the hæmorrhage is subchoroidal, whereas in the four cases under review the bleeding was subretinal in one (No. 157), into the vitreous chamber alone in one (Fig. 24), and into both the vitreous chamber and the subretinal space in two. The hæmorrhage into the vitreous chamber was probably due to injury to the retinal vessels by the coucher's instrument, though it is possible that blood may have found its way through the retinal cut from choroidal vessels divided at the time. The subretinal hæmorrhage probably escaped from the severed branches of the smaller choroidal vessels. The fact that in no case was a large subchoroidal hæmorrhage present would indicate that the large choroidal vessels were tough enough to escape injury, being probably pushed aside by the comparatively blunt instrument the coucher used. In one eyeball (No. 157) large cholesterine crystals were seen shining on the cut surface of the sanguineous mass. A similar phenomenon was observed in the case of one of the albuminous effusions above spoken of.

It remains to deal with a rare cause of detachment of the retina or of the retina and choroid—viz., the application of direct violence at the time of operation. This is best exemplified in the two globes, in which the cataract was thrust through and behind the retina, by the coucher's instrument at the time of operation. (*Vide* Fig. 13.) It is also beautifully illustrated by specimen No. 72 in which the retina and choroid were carried in front of the coucher's instrument before the latter succeeded in perforating them. (*Vide* Fig. 20.) The dislocation thus produced proved permanent.

Dots on the Retina.

A striking feature of the series of specimens before us is the presence of numerous dots on the retina. These are to be seen in 16 cases, and doubtfully in a seventeenth. In at least one other similar dots are present on the choroid and on the posterior surface of the iris. (*Vide* Fig. 18.) We therefore find this peculiar appearance in one case in every three; but this is far from representing what is probably its real relative frequency, for in 24 of the globes the retina was totally detached, and it was therefore impossible to say whether there were dots present on it or not. If we put these 24 to one side, we find that the dots were certainly present in 16 out of 30—that is, in well over 50 per cent. If we include the other two cases above alluded to the figure rises to 60 per cent.

In some of the specimens the dots are so large that they could scarcely be missed under a careful naked-eye examination (*vide* Fig. 10), whilst in others they were only discovered when highly magnified photographs of the eyeballs were thrown on a screen. (*Vide* Fig. 9.) They could, however, be found easily with a loupe once their presence was known. The variation in different specimens was not confined to size; some of the dots were white, others were a pale grey, and a few were bright and shiny. Again, some of them appeared much more sharply defined than others.

It was at first thought that manifestations so distinct under slight magnification would yield very definite appearances under the microscope; but, on the contrary, much difficulty has been experienced in deciding the nature of the changes which have given rise to this phenomenon.

One of the first points noticed was that the dots were found almost exclusively in long-standing cases. This of itself would appear to indicate that their cause was to be sought in some degenerative process; but a closer analysis of the histories revealed a probable fallacy in such an argument, since a number of the eyes had had good vision for a long period after operation, and had eventually succumbed to a fresh inflammatory invasion, or possibly to a more severe recrudescence of a septic condition implanted at the time of operation.

On examination of a number of specimens three distinct appearances have been found, any one of which might presumably account for the dots seen with the naked eye.

1. In some of the globes a proliferative retinitis can be found along certain of the vessels. (Fig. 25.) These consist in section of masses of mononuclear leucocytes surrounding the vessel wall and tending to make their way to the inner surface of the retina. It might be thought that such a change would produce lines rather than dots, and that those lines would run along the course of the vessels, but there are two features which make this doubtful: (*a*) even under the same field some of the vessels appear quite healthy on section, whilst others show distinct masses of proliferation, and (*b*) along the course of a vessel cut obliquely one may find the proliferative exudate confined to one part of its course, the rest being comparatively free.

2. In the neighbourhood of some of the inflamed retinal vessels above spoken of, one finds on the surface of the retina what appear to be free collections of mononuclear cells. (Fig. 26.) These are apparently of the same nature as the dots described by Straub on the posterior surface of the cornea and in the vitreous body. It will be remembered that he attributed them to chemotaxic action. It would appear not improbable that the same explanation holds for these retinal dots. It is of interest that though they occur in cases of long standing, the history of a subsequent inflammation, destructive to vision, is of a much later, and indeed of a comparatively recent date. The presence of such exudative masses would then be easily explained.

3. The grouping of these dots varies considerably in different specimens, but does not lend much colour to the idea that they are vascular in origin, for in some at least of the eyes they certainly do not follow the course of the vessels. On the other hand, in a few of the eyeballs there is a massing of these dots in the neighbourhood of the ora serrata, which is in itself suggestive of a degenerative process, since this is the area of lowest circulatory activity, inasmuch as this region is supplied by the ultimate twigs of the retinal vessels. This observation gathers interest from the fact that in quite a number of these specimens it is possible to demonstrate the presence of small cysts in the walls of the retina. (Fig. 27.) These cysts are produced by the coalescence of œdematous spaces in degenerative areas. All stages of the process can be traced in different specimens of the series before us. Such cysts are only likely to be met with in long-standing cases in which the degenerative processes have had time for full play.

Inasmuch as these retinal dots are found in the cases in which the retina is still in its normal position, it would seem probable that a careful clinical search should reveal their presence in living eyes now that their existence is established pathologically. It is a point which should repay the study of surgeons who are practising where couching is commonly resorted to, and especially in India.

GLAUCOMA.

It has long been known that couching is frequently followed by secondary glaucoma. In the present series of 54 globes, 19 of them showed evidence of high intra-ocular pressure. This figure must not, however, be taken as a reliable index of the numerical frequency of glaucoma as a complication of the operation. On the one hand, we must remember that the present series deals with the failures only, and that a large number of eyes are met with clinically in which the lens is floating free in the vitreous chamber without any sign that the intra-ocular tension is raised. Again, the cases which go on to suppuration, and which are very numerous, are excluded from the present series owing to the fact that all such were eviscerated in order to avoid the risk of intracranial sepsis. This obviously diminishes the total number of globes under consideration, and thereby raises the apparent percentage of other conditions, such as glaucoma. On the other hand, it would be a mistake to suppose that out of these 54 globes only 19 had suffered from secondary glaucoma for in 24 of them a complete detachment of the retina had covered up any evidence which may at some time have existed of the presence of increased intra-ocular pressure, though the conditions still found in some of them make it more than probable that the globes were formerly glaucomatous. In any case, it leaves us with the fact that out of 30 eyeballs which were available for accurate examination no less than 19 were glaucomatous. In 16 of the 19 the angle of the anterior chamber was extensively closed, and in 3 of these the chamber was so shallow as almost to be reduced to a potential slit. The remaining 3 are thus accounted for; in one the angle was widely open and there was free communication between the aqueous and vitreous chambers; in a second, a Morgagnian lens was impacted in the angle of the anterior chamber; whilst in a third the operation was followed by a very severe hæmorrhage, which probably had the direct effect of over-distending the hyaloid cavity at the expense of the aqueous chamber.

Returning to the 16 cases, in which the angle of the chamber was closed, and to certain other eyeballs in which it seemed probable that glaucoma had at some time been present, we found that in every one of them one or other of the accepted causes of secondary glaucoma was revealed when looked for; in some, more than one such cause was discoverable. We shall content ourselves with enumerating these factors.

A corneal fistula, with evidence of past anterior staphyloma, was present in one; in one there was a capsulo-corneal synechia, and in another a retino-corneal synechia; in 5 the ciliary body was involved in the scar; in 6 the dislocated lens pressed extensively on the iris base; in 3 the lenses, tilted at right angles to their normal position, pressed the anterior hyaloid membrane severely back on the side of the dislocation, whilst causing the vitreous to bulge the iris forward into the anterior chamber on the opposite side; in 5 the pupil was blocked, and in 3 of these *l'iris bombé* was present; in 2 the anterior layers of the hyaloid were so thickened by inflammatory exudate as to suggest that there was an abnormal obstruction to the passage of fluid across the membrane; in one, a marked thickening of the lens capsule in the form of an after-cataract may possibly have provided an obstruction to the forward passage of fluid from the vitreous; lastly, there is one globe in which glaucoma had probably been present before the operation, if one may judge from the history of the case and from the violent hæmorrhage which followed the couching.

It has been suggested that one of the causes of glaucoma after this operation is an advance of the front part of the vitreous body owing to a rupture of the anterior layers of the hyaloid during the operation. Without in any way denying that the suggestion may be a valid one in certain cases the impression, gained from a study of this series, is that we need look no further than the well-recognised causes of secondary glaucoma. We have only to remember that the trauma inflicted is extensive and various, and that a greater or less degree of sepsis accompanies every couching in the hands of its Indian exponents.

CONCLUSION.

In conclusion, it remains to express my indebtedness to those who have very kindly assisted me in various ways. Professor Keith has done everything in his power to help me. I owe Mr. Hudson my acknowledgments for kindly cutting a difficult specimen for me and for his advice on its details. Mr. Treacher Collins has generously given me advice and assistance of the greatest value in the study of a number of the eyeballs and of the microscopical specimens made from them. I have acted freely on a number of the suggestions he has been good enough to make. The cutting of the microscopic specimens has been done by Mr. S. Stephenson and by Mr. Chesterman, to whom I am greatly indebted for the care they devoted to them. The photographs, both macroscopic and microscopic, and the lantern slides made from them, as also the stereoscopic pictures, have, with very few exceptions, been taken by Mrs. Elliot, without whose help the present work could not have been done. The exceptions were taken by my late assistant in Madras, Mr. C. Taylor, to whom, as well as to Lieutenant H. C. Craggs and all my staff, I am deeply indebted for the loyal assistance they gave me during years of methodical and painstaking work. Major H. Kirkpatrick and Captain W. C. Gray (both of the I.M.S.) have put me deeply in their debt by the generosity with which they have helped me since I left India, placing their material unstintedly at my disposal. Dr. Ekambaram has given me much valuable and carefully gathered information. Messrs. Underwood and Underwood have kindly lent the stereoscopes used for these demonstrations.

THE AGGLUTINATION CURVE AND ITS IMPORTANCE IN THE DIAGNOSIS OF TYPHOID AND PARATYPHOID FEVERS IN INOCULATED PERSONS.

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AND
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(*A Report to the Medical Research Committee.*)

IN February, 1915, one of us (G. D.), in conjunction with Ainley Walker and Gibson,[1] stated that accurate differential diagnosis of enteric group cases can only be obtained by routine testing of the serum of the patient against the three micro-organisms *B. typhosus* and *B. paratyphosus* A and B, in parallel series of observations, and by always determining the *maximum* dilution of the serum in which agglutination takes place. For individuals who have been inoculated with antityphoid vaccine within a period of some months or even years will, as we have shown, usually give a high agglutinin titre against *B. typhosus*.[2] Whether they are suffering from active typhoid infection or not can only be determined by repeating the agglutination test at intervals in order to ascertain whether the titre of agglutination shows marked changes or remains practically constant.

Further, a technique which had proved satisfactory for the agglutination test over a period of years and in a very large number of tests was re-described in detail. The advantages of this technique lay essentially in the employment of Standard Agglutinable Cultures for the performance of macroscopic tests. From July, 1915, such standard cultures and the equipment for carrying out the test were issued from the Department of Pathology in the University of Oxford on behalf of the Medical Research Committee for the use of the medical services of H.M. Army and Navy.

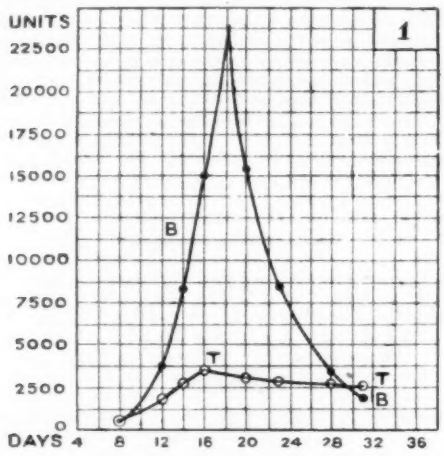
In March, 1915, we decided to study the agglutinin curves in a series of patients suffering from infection by bacilli of the enteric group, all of whom had been inoculated with typhoid vaccine. The necessary material was kindly placed at our disposal by Lieutenant-Colonel Evans, D.S.O., O.C. Stationary Hospital, B.E.F. A short paper embodying our results was prepared for publication late in the same year. But unfortunately it was destroyed by fire along with the majority of the curves and a mass of other data. Fortunately the data for few of the curves had been preserved in duplicate elsewhere, but pressure of other work has prevented us from reconstructing and publishing our intended article. The knowledge which we gained in the course of the work has, however, formed the basis of a number of

statements regarding the diagnosis of enteric fevers in typhoid-inoculated individuals which have been made in several succeeding publications.

We now propose to publish these surviving curves, with brief comments, as evidence confirmatory of the statements made by one of us (G D.) regarding the importance of employing accurate quantitative methods in the performance of the agglutination test as applied for the diagnosis of infections of the enteric group in inoculated persons. We shall then be in a position to re-state and explain certain broad generalisations directly emerging from these data on which diagnosis rests, and whose neglect has recently led Martin and Upjohn to reach conclusions which impugn the value of agglutination tests in inoculated subjects.

It will be convenient to begin by explaining certain terms employed in connexion with the technique of the use of standard agglutinable cultures.

1. *Standard Agglutinable Cultures* are prepared of definite opacity and measured agglutinability from strains of the bacilli concerned which have been specially selected for their high specificity. In successive batches of standard agglutinable culture the relative sensitiveness to agglutination of the



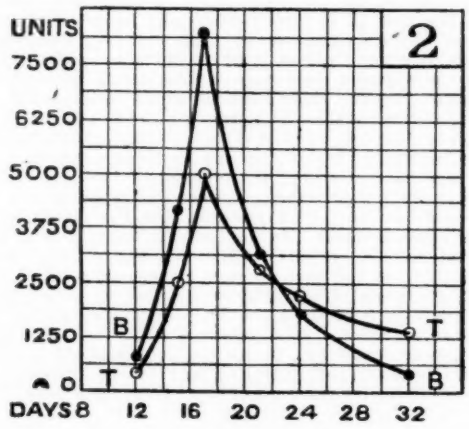
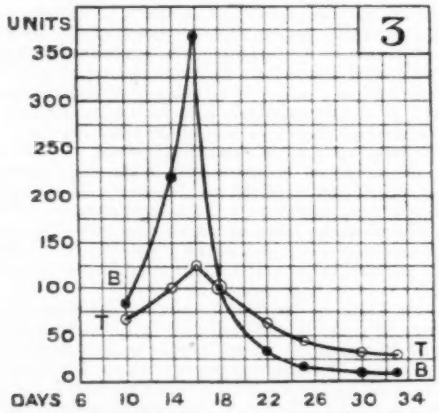


CHART 1.—*Paratyphoid B* occurring in a T.-inoculated individual. The B agglutinins rise rapidly from the first observation on the eighth day of the disease and reach the very high level (unusually high) of more than 15,000 units on the sixteenth day. As seen from the shape of the curve the maximum is even much higher than this and is reached about the eighteenth day. Thereafter the usual regular fall sets in at first rapidly, so that the units have fallen from somewhere about 24,000 to 8600 in the next five days, subsequently more slowly. Meanwhile the T. agglutinins have risen very markedly, though relatively much less. They attain their maximum of about 3500 units about the sixteenth day, some two days before the maximum of B agglutinins, falling from this point in a very gradual but quite regular curve to about 2800 units on the twenty-third day. After the thirtieth day B agglutinins, though still much higher than their level at the first observation, have fallen below the T. agglutinins, the titre in the two cases being 1800 units and 2500 units respectively, showing the greater persistence of the rise produced in the T.-inoculation agglutinins as the result of paratyphoid B infection than in the B agglutinins themselves.

CHART 2.—*Paratyphoid B* occurring in a T.-inoculated individual. This curve is another example of a high agglutinin reaction to paratyphoid B infection. In this case both the absolute and relative increase in T. agglutinins caused by the paratyphoid B infection is greater than in the former example. The B maximum is reached on the seventeenth day, as is also that for T. agglutinins. The fall in T. agglutinins is much more marked than in the previous example, but the titre of B agglutinins falls even more rapidly so that the curves have already crossed on the twenty-third day. On the thirty-second day the B agglutinins stand at about 400 units while the T. agglutinins are 1400 units.



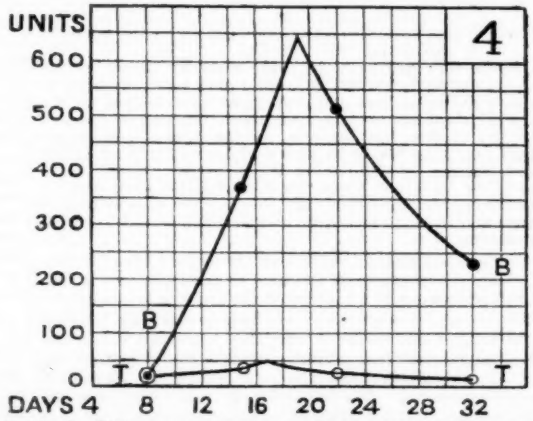


CHART 3.—*Paratyphoid B* occurring in a T.-inoculated individual. This curve shows a moderate agglutinin reaction to paratyphoid B infection. The B agglutinins rise from about 100 units on the tenth day of disease to a maximum of 370 units on the sixteenth day. Thereafter they fall very sharply, and two days later (on the eighteenth day) are already down to 100 units. The T. agglutinins undergo a relatively marked rise and subsequent fall, reaching about 125 units on the sixteenth day, and thereafter undergoing a gradual fall and crossed by the paratyphoid curve, which falls below it from about the eighteenth day.

CHART 4.—*Paratyphoid B* in a T.-inoculated individual. This curve is introduced to show a case in which the absolute rise and fall in T. agglutinins caused by the B infection is only small, though the response of the B agglutinins is marked. Here the maximum of the T. agglutinin titre is antecedent (seventeenth day) to that of the B agglutinins (nineteenth day).

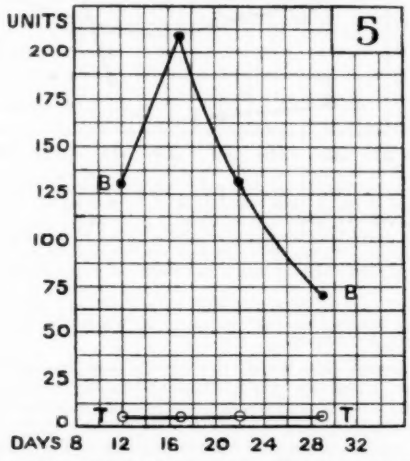
bacilli contained is indicated by a figure—the so-called *Reduction Factor*—the original standard agglutinable cultures having been arbitrarily given the figure 2·5 as reduction factor. The reason for this will appear immediately in connexion with the *Standard Agglutinin Unit*.

2. *Standard Agglutination* is the degree of agglutination present in the highest serum dilution in which marked agglutination without sedimentation can be seen by the naked eye.

3. The *Standard Agglutinin Unit* is that amount of agglutinating serum which when made up to 1 c.c. volume with normal saline solution causes standard agglutination on being mixed with 1·5 c.c. of the original standard agglutinable culture and maintained at 55° C. for 2 hours (in the case of dysentery agglutination 4½ hours) in a water-bath, followed by 15 to 20 minutes at the room temperature.

4. The *Reduction Factor*.—The total volume in which the reaction occurs being 2·5 c.c. (1 c.c. of serum added to 1·5 c.c. of standard culture) the original standard agglutinable culture was given the reduction factor of 2·5 to express the sensitiveness to agglutination of that particular culture. All subsequent batches of culture have been given reduction factors calculated on this basis, thus securing constancy in the agglutinin unit. For example, if a batch of standard culture proves to be twice as sensitive to agglutination as the original standard, so that half the amount of serum produces standard agglutination under test conditions the new standard culture is given a reduction factor of double the size of the original factor—i.e., 5. Thus, whatever be the particular standard culture used to test any given serum the number of agglutinin units found per c.c. of the serum remains always the same, although the dilutions in which standard agglutination occurs will be different. Since when standard agglutination occurs in a serum dilution of 1 in x, then x divided by the reduction factor for the particular standard agglutinable culture used gives the number of Standard Agglutinin Units contained in 1 c.c. of the serum concerned.

5. *Readings*.—Owing to the rate at which the dilution increases in the series of tubes employed it will commonly happen that no tube in the series exhibits standard agglutination. If this be so, it will be found in looking along the series that while one tube shows strong agglutination with sedimentation the next succeeding tube shows no



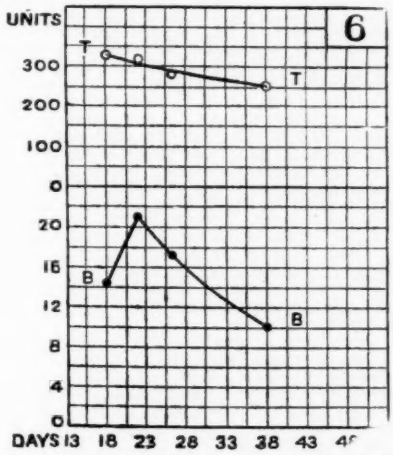
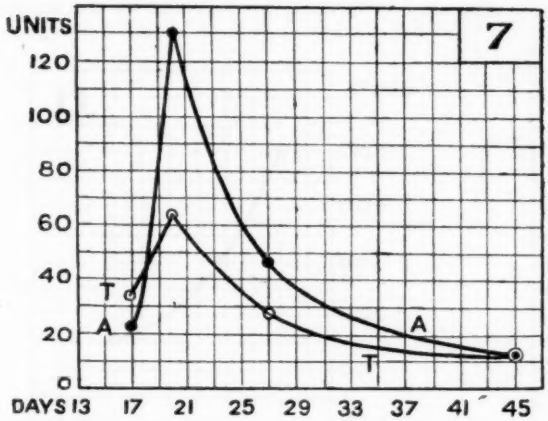


CHART 5.—*Paratyphoid B* in a T.-inoculated individual. This curve illustrates a case in which the T. agglutinin titre which stands at a low level remained unaffected by the B infection, though the B agglutinins reach a fairly nigh titre and show the usual curve of rise and fall, the maximum being reached on the seventeenth day.

CHART 6.—*Paratyphoid B* in a T.-inoculated individual. This curve shows one of the rarer cases of paratyphoid B in which the response of B agglutinins is small in absolute measure, though exhibiting the usual diagnostic rise and regular fall of active infection. The T. agglutinins are at a high level, but move very little in response to the B infection. Their maximum is reached about the eighteenth day, while the B maximum falls about the twenty-second day at a height which reaches only 20 units. From this point it falls steadily.



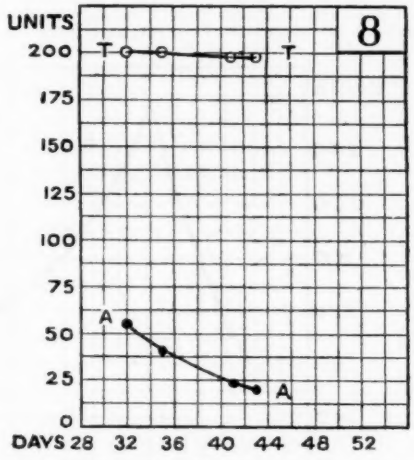


CHART 7.—*Paratyphoid A* in a T.-inoculated individual. The agglutinins rise rapidly from about 20 units on the seventeenth day of disease to their maximum of about 130 units on the twentieth day. Thereafter they fall rapidly to reach the level of about 45 units on the twenty-seventh day. The further course of the curve is shown in the chart. The T. agglutinins show a marked relative rise and fall with a maximum of about 64 units on the twentieth day. The fall is less steep than that of the A agglutinins.

CHART 8.—*Paratyphoid A* in a T.-inoculated individual. A late case. The T. agglutinins are at a high level, remaining practically unaffected by the A infection at a titre of about 200 units. The A agglutinins show a steady fall from 56 units on the thirty-second day of the disease to 20 units on the forty-third day.

agglutination or only a trace. In such cases standard agglutination lies approximately midway between the two dilutions. Though this method of making readings is amply adequate for diagnostic purposes it will be found that should a more precise determination of the limits of agglutination be required it can be obtained by using a stand of 12 tubes with the series of quantities given in the table contained in the Directions for Preparation and Standardisation of Agglutinable Cultures, where the successive dilutions of the serum only differ by about 20 per cent. Almost as accurate a reading can, however, be obtained with experience from the short series by taking note of the *degree of agglutination* present in each tube and by using a suitable interpolation table. This method has been used by one of us (G. D.) for a number of years, but was not introduced into the Directions for the Use of Standardised Agglutinable Cultures in order to avoid the appearance of unnecessary complications. But since it has been found of assistance by a number of workers to whom it has been privately communicated, especially where large numbers of cases had to be examined, it is now published here.

The principal terms employed in describing the different degrees of agglutination met with are "total" (t), "standard" (S), "trace" (tr), and "nil" (0). *Total* agglutination indicates the condition in which the whole, or practically the whole, of the agglutinated bacteria have settled down at the foot of the tube. *Standard* agglutination has already been described; the term *Trace* is applied to a very fine granulation recognisable by the naked eye. Around these main terms subsidiary differences congregate themselves as follows: *Total minus* (t −) marked deposit, but a number of floating flocculi remaining in the fluid. On each side of "standard" we find *Standard plus* (S +) and *Standard minus* (S −) respectively. In the former no deposit, but much larger flocculi than are seen in standard agglutination. In the latter finer agglutination than standard, with more the appearance of granulation in the fluid. Similarly, we recognise a *Trace plus* (tr +) and a *Trace minus* (tr −), the former representing something more than *trace* but less than *standard minus*, the latter being on the limit of naked-eye visibility. Finally, on occasion it can be difficult to decide with certainty whether a given tube is absolutely nil or not, the term *query trace* (tr ?) is then applied.

These terms were originally worked out in the course of investigations in which long series of tubes were employed, since it was found that differences of the extent of those described were recognisable; and it appeared that if an ideal series was put up in which the dilution of the serum increased and diminished on each side of the tube presenting standard agglutination by some 12 to 15 per cent. it presented in successive tubes between total agglutination and nil all these different degrees of agglutination. Accordingly the following interpolation table was calculated:—

t 1·46	S+ 1·13	S− 0·88	tr 0·68	tr ? 0·53
t − 1·29	*S* 1·00	tr+ 0·78	tr− 0·60	0 0·46

The table is used as follows. Supposing no tubes in the series shows *S* agglutination, but we have *t*− agglutination 1 in 250, and *tr* agglutination 1 in 500. It follows from the first of these readings that *S* agglutination would be found in a dilution of 250 × 1·29, i.e., 323, and from the second reading *S* agglutination should be found in a dilution of 500 × 0·68, i.e. 340. The average of these two figures (331) is taken as the dilution which gives standard agglutination, and this number divided by the reduction factor of the culture used gives the number of standard agglutinin units per c.c. of the serum examined.

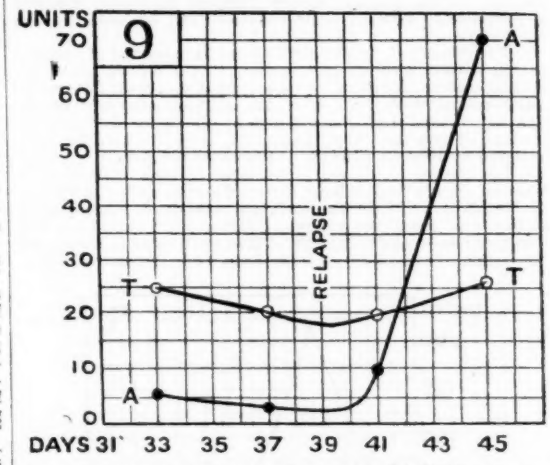
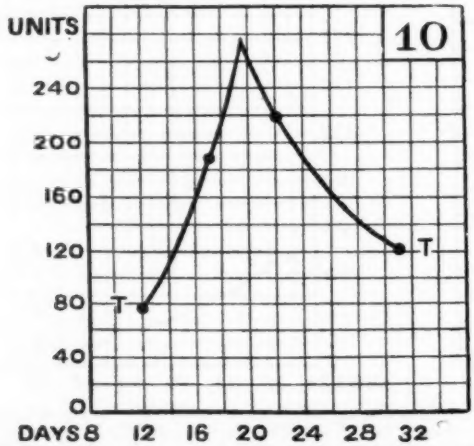


CHART 9.—*Paratyphoid A* in a T.-inoculated individual, where the original attack was followed by a relapse. This case is specially instructive since it illustrates both the fact that the development of agglutinins in paratyphoid A infection often only reaches a low titre, even at its maximum, and the fact that in a relapse of this infection there is frequently a very marked development of agglutinins. The T. agglutinins rise slightly with the original A infection, but in this case there is only a feeble T. response to the A relapse.

The figures from which the curves here given are drawn were arrived at by this method of making readings. In *every case* quoted the diagnosis was confirmed by the isolation of the infective organism from blood, stool, or urine. In the curves the actual observations are represented either by a dot or a ring. The dot mark is always used to indicate the curve produced by the infecting micro-organism.

These charts show how the enteric infections may be diagnosed in inoculated persons, by carrying out successive observations of the exact agglutinin titre of the serum for T., A, and B at suitable intervals (of about four days). They also show how entirely misleading it would be to draw conclusions from a single observation of the height of the titre since in many instances the titre for the infecting micro-organism may be found less than that for the inoculation



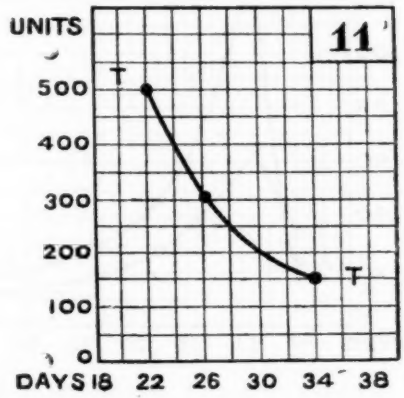


CHART 10.—*Typhoid fever* in a T.-inoculated individual. The curve shows the typical rise and fall in agglutinin titre, the maximum being reached about the twentieth day.

CHART 11.—*Typhoid fever* in a T.-inoculated individual. A late case. There is a typical fall in T. agglutinins from the first observation on the twenty-second day of the disease, when they stand at 500 units, to the last observation on the thirty-fourth day, when the agglutinin titre has fallen to 150 units.

agglutinins, and may indeed be lower throughout the whole infection. On the other hand, it is certainly the case that at its maximum the titre for the infecting micro-organism will *usually* exceed the titre of inoculation agglutinins even though these may be greatly raised as a result of the infection. Nevertheless, as the fall in titre proceeds the curve of A and B agglutinins falls more rapidly than the curve of T. inoculation agglutinins, so that the latter is cut by the former at some points in the fall.

The maximum agglutination titre for the infecting organism most frequently occurs about the eighteenth to twentieth day, and almost always lies within the limits sixteenth to twenty-fourth day of the disease.

As regards the effect of active paratyphoid infection on the typhoid inoculation on agglutinins one of three things may occur: (*a*) The titre may remain unchanged throughout the infection; (*b*) it may undergo a rise of moderate extent; (*c*) it may undergo a marked rise. When such rises occur it is found that they are either synchronous with or antecedent to the rise of agglutinin titre for the infecting micro-organism, and that the maximum falls somewhat earlier than the maximum for the infection agglutinins (or occasionally at about the same time). The change in T. inoculation agglutinins associated with paratyphoid infection is in general much more marked in the case of paratyphoid B than in the case of paratyphoid A.

In view of what has here been shown, it is obvious that it would be quite futile to try to fix a limit of agglutination titre for T.-inoculated individuals, and to proceed to diagnose cases which showed higher titres (even many times higher) as cases of active typhoid infection. The final guide in all these cases of enteric infection is the relative extent of the rise and fall in agglutination titre for the organisms concerned, together with period when the maximum titre is reached.

In a recent article by C. J. Martin and W. G. D. Upjohn these authors emphasise the existence of numerous difficulties in the diagnosis by agglutination tests of the enteric fevers in typhoid-inoculated persons. These difficulties might readily have been avoided had they taken cognisance of what has been repeatedly and clearly stated on this subject.[3 1 4 5 6] And they would have been saved from the conclusion that since the introduction of triple inoculation (T., A, B) "the interpretation of observations upon the agglutination of enteric organism will ..... be too difficult to possess any practical value, and the isolation of the infecting organism must be resorted to for diagnosis."

In a subsequent article it will be shown that although the difficulty of diagnosis by agglutination tests is to some extent increased by triple inoculation the validity of the tests is in no way impaired. They remain not only the most certain method of diagnosis, but form, in fact, the only method which can be relied upon if a large proportion of the cases are not to be missed. For it is well known that isolation methods fail to detect the infecting micro-organism in blood, stool, or urine in a majority of all cases of typhoid and paratyphoid fevers.

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NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A course of advanced lectures on infant care is to be given under the auspices of this association at the College of Ambulance, 3, Vere-street, London, W., on Mondays from March 12th to June 18th inclusive. The lecture hour is 5.30 P.M. The course is in preparation for the advanced certificate given by the association, and is intended for teachers and infant welfare workers. The theoretical lectures are supplemented by tutorial courses at various training centres in London. Particulars may be obtained from the secretary, Miss Halford, at 4, Tavistock-square, London, W.C.

A SIMPLE ULCER OF THE ŒSOPHAGUS

PERFORATING THE DESCENDING PORTION OF THE AORTIC ARCH AND CAUSING FATAL HÆMATEMESIS.

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DIRECTOR OF THE CIVIL HOSPITALS OF KHARTOUM AND OMDURMAN, SUDAN.

SIMPLE ulceration of the œsophagus is, clinically, a rare condition, it is probably present more often than diagnosed, but death from the perforation of a latent ulcer of the œsophagus into the aortic arch must be very rare.[1] I beg, therefore, to take the liberty of recording this case. Of all parts of the alimentary canal in man ulceration is least commonly met with in the œsophagus.[2] A few cases of simple "peptic" ulcer of the œsophagus have been reported —one only is recorded which perforated the aorta. The following account is of a case of fatal hæmatemesis in an Englishman aged 36, which occurred in July, 1916, at Khartoum, and was due to the ulcer perforating the descending part of the arch of the aorta. The clinical history is as follows.

On July 21st, 1916, the patient consulted a medical man because he had, he thought, "something in the throat" and, as he had first noticed it after dinner on the previous evening when he had partaken of a dish of soft fish, he thought that he might have a fish-bone lodging in his throat. There being no clinical evidence of fish-bone or foreign body he was put to bed and given expectant treatment. His symptoms were as follows. He felt as if there was "something in the chest"; he felt it when he swallowed, more especially when he swallowed "nothing" and also when he drew a deep breath. He located this sensation, which was more discomfort than pain, inside the chest behind the sternum, at a place which would correspond to the level where the ulcer was eventually found. He also had some pain behind, which he located between the shoulder-blades. He had a thickly coated tongue; it was always thickly coated, he said, and the thermometer registered 100° F. on admission. There was nothing to be seen in the throat, no physical signs of anything amiss in the chest, and, in fact, the only symptoms indicating that there was anything wrong were a rise of temperature to 100°, a coated tongue, and discomfort, sometimes amounting to a little pain, on swallowing or drawing a deep breath.

I am emphasising the total absence of serious symptoms, because seven days after the time when he first consulted a medical man about these small symptoms he had a large hæmorrhage, and one day after this the fatal hæmorrhage occurred. On July 23rd, the temperature being normal and the symptoms having almost disappeared, the pain having become diffused amongst the muscles of the back, as he said, he returned to his own house. On the 25th he was still having discomfort in swallowing and was admitted again into hospital. Again the temperature was 100·2°, and again it dropped to normal on the following day and remained so, and on the morning of the 28th, when I asked him to swallow a mouthful of water and also to draw a deep breath and tell me whether he had pain and where, he, after thinking for some time, said in both instances, "Well, I really cannot say that I feel anything at all now." I wish still to emphasise the absence of symptoms and physical signs, because we have reached the very day of the first hæmorrhage, which was nearly fatal, and the day before the fatal hæmorrhage; and yet, although the ulcer must already have attacked the aorta and was progressing and on the verge of perforating, there was nothing to indicate it but a dirty tongue and a little discomfort in the chest.

At 4 P.M., on July 28th, whilst reclining in a large chair, the patient brought up a little mucus streaked with blood. He was put back into bed. At 6 P.M. he vomited half a basinful of blood, clotted and fairly bright, which had evidently been retained in the stomach. No further visible hæmorrhage occurred for 24 hours; evidently the opening into the aorta being a small one became plugged by a clot (this was seen post mortem). The patient seemed to be doing well and he was kept under morphia and given nothing which

[1] Osler (Principles of Medicine, eighth edition, p. 473): "Tileston collected 40 cases of peptic ulcer œsophagus (first described by Albers 1839). Six perforated the œsophagus and one perforated the aorta with fatal result."

[2] This immunity of the œsophagus is due to the fact that, taking very little part in digestion, it is simply a connecting tube of comparatively simple structure, vertical in position, and being accommodating in capacity it allows of the rapid transit of foodstuffs through it. It is therefore not much exposed to the danger of contracting disease from outside sources.

would tend to raise the blood pressure. The question of a gastrotomy was discussed and dismissed. In point of fact, as was subsequently found post mortem, the situation of the ulcer was inaccessible to operation. On the 29th, 24 hours after the first large hæmorrhage at 6 P.M., he had another large hæmatemesis, evidently blood which had accumulated in the stomach having trickled down from the ulcer, and he died one and a half hours afterwards.

At the necropsy it was found that the hæmorrhage came from an œsophageal ulcer which had become adherent to the descending part of the arch of the aorta, in the neighbourhood of the bifurcation of the trachea (Fig. 1), and which had

FIG. 1.

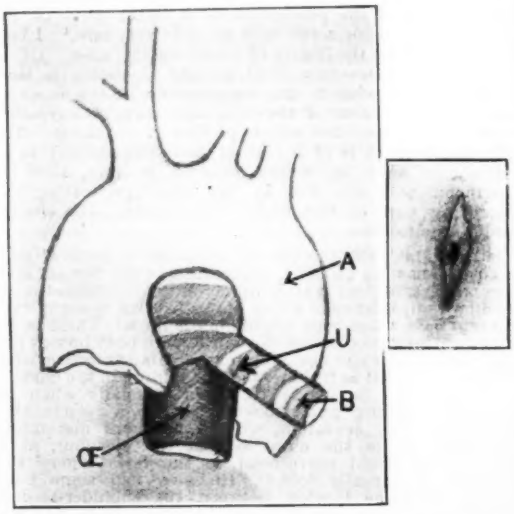

Diagram to show approximate size of ulcer (U) in œsophagus (Œ) and the relation to it of the descending part of the arch of the aorta (A). B, left bronchus. A drawing of the ulcer perforating the aorta just behind the left bronchus is attached to the diagram.

penetrated the arterial wall. The stomach was very much distended, containing two or three pints of blood which had found its way down from the ulcer into the stomach and distended it. There were two other ulcers in the œsophagus, both situated at the cardiac end just within the œsophagus, one of which had healed with a cicatrix and the other, a larger oval one, in the process of healing. (Fig. 2.) Sometimes he had complained of a little pain in the epigastrium, and the situation of these ulcers would perhaps account for this. The stomach and all the other organs were healthy. The liver weighed 2½ lb., the spleen 2½ oz. The liver and spleen were examined particularly because the patient was said to have had kala-azar some years ago. In appearance they presented nothing abnormal (excepting the spleen, which was unusually small).

Non-malignant ulcers in the œsophagus are rare; they may be classified as follows:—

1. *Traumatic.*—Corroding fluid (swallowing of); sharp instruments (injury by); foreign bodies (such as fish-bone) blows, violence (bruising by).
2. *Latent ulcer.*—Which may perforate just as gastric ulcer.
3. *Specific.*—Syphilitic.
4. *Secondary ulcers.*—During the course, or as sequelæ, of diseases such as typhoid, kala-azar, diphtheria, scarlet fever, or pneumonia.
5. *Aneurysmal.*—Due to an adjacent aneurysm of the aorta, or other great vessel, ulcerating into the œsophagus.

The (1), (3), and (5) classes may be excluded at once in the present case.

(*a*) There was no history of anything which could have produced a traumatic lesion, not even a fish-bone; the other two small ulcers (nearly healed) at the cardiac end of the œsophagus are in themselves sufficient evidence against the perforating one being traumatic—both were chronic ulcers in the process of healing, and the fatal one was also a chronic ulcer. Perforating chronic ulcers (peptic) have been described in the œsophagus. They are rare; only a few cases are described.[3] Albers first described them in 1839. Tileston collected 40 cases; six perforated and one perforated the aorta.

The same conditions do not exist in the œsophagus as in the stomach to give rise to ulceration. So that simple œsophageal ulcer must be a diagnosis based to a large extent on a process of exclusion. A definite diagnosis is, I think, impossible to make until hæmorrhage takes place.

(*b*) Nor was it a syphilitic ulcer. There was no evidence at all to favour such a diagnosis.

(*c*) There was also not a single particle of evidence in favour of a diagnosis of aneurysm. Seen post mortem, the wall of the aorta was perfectly normal and healthy, except where the perforation was, and the patient had not had syphilis. His urine and kidneys were perfectly normal, and he had no aneurysm-producing disease.

There remains Class (4)—ulceration due to complications and sequelæ of former illness. Two possibilities suggest themselves in this case. The patient is said—I am bound to say on unconvincing evidence—to have contracted kala-azar in 1907. Now, ulceration of the intestines is a common complication of kala-azar, so it is worth while pausing just for a moment to consider this possibility. Suppose, for the sake of argument, that he did contract kala-azar in 1907. After his return to the Sudan in 1908 up to the time of his death in 1916 he appeared perfectly free from any suspicion of it, and at his death the spleen weighed only 2¼ oz. and the liver 2¼ lb. This, in addition to the fact that ulceration of the bowels is a late complication in kala-azar when the patient is very thin and weak, sufficiently, I think, disposes of the kala-azar theory.

There remains the theory of typhoid ulceration and sequelæ, and I must say at once that the evidence appears

FIG. 2.

Photograph of junction of œsophagus (above the line) and stomach (below the line) showing the two ulcers, one healed (H), the other active (A), situated just within the œsophagus.

to me in favour of this diagnosis—sequelæ after typhoid, although it was six years after the attack of typhoid fever. The two lower ulcers exactly corresponded to healing and healed typhoid ulceration (Fig. 2). The ulcers were chronic, and the symptoms were insidious and probably had lasted over a long period, giving time for the aorta to become adherent to the œsophagus. The appearance of the ulcers was oval in the long axis, base granular, surface shallow, edges smooth and overhanging, margins level, and not irregular and heaped up. (Fig. 1.)

The evidence—partly exclusive, partly of local appearance, partly of history—and the circumstances point to old typhoid ulceration. This is the opinion I myself hold, for it is the

[3] Osler, eighth edition, 1912, p. 473.

only opinion which is, I think, consistent with the facts. Still an ulcer, of whatever origin, of the œsophagus, situated at the part which is in relation to the aorta so that it perforated, causing fatal hæmorrhage, is rare. It might fittingly be placed in the category of "accidents of medicine." Six years had passed since the patient had had the typhoid fever, but the attack had been a severe one, and although the ulcers at the time of death may not have been specific in the sense that they were infected with Eberth's bacillus, still an old ulcer whose base had become fixed to the aorta might, owing to the strain of gymnastics or polo, resume activity, and this is how I view the case. A few days previous to his illness the patient had complained of some discomfort in the chest after gymnastics, and I think that probably this lighted up into activity an old ulcer which was adhering to the aorta—a sequela of typhoid six years previously. The original attack of typhoid, I am informed by the medical man who attended, was typical and serious. The patient had hæmorrhage and he was carefully watched for perforation, and convalescence was long.

From general and microscopical appearances the ulcer was an old one. The aorta was with difficulty separated by dissection from the œsophagus in the neighbourhood of the ulcer, showing chronicity. The inflammation from the base of the ulcer had fixed the aorta to the œsophagus, and under the microscope there was an arteritis round the perforation in the aorta. The aorta having become fixed to the base of the ulcer as inflammation proceeded, it became in its turn the base and was involved in the processes going on. As ulceration slowly proceeded the artery became the floor of the ulcer; then softening of the arterial wall occurred and perhaps a little bulging (the arterial wall round the perforation was funnel-shaped and thinned, as if it had been bulging at this point). The bulging occurred, perhaps, when the patient had been doing gymnastic exercises on the day previous to admission. Then came ulceration of the aortic wall forming the floor of the ulcer, and the occurrence of the streaks of blood in the brought-up secretion, and two hours later perforation and the large hæmorrhage on July 28th Then the cessation of the hæmorrhage caused by plugging of the small perforation by blood clot, and, finally, after an interval of 24 hours, the displacement of the cork of blood clot and fatal hæmorrhage.

The above appears to have been the pathological sequence of events. There remains, however, the cause of the œsophageal ulcer. The general appearance of the ulcer itself, the presence of the two other ulcers, one quite healed and the other healing, at the cardiac end of the œsophagus, the noticeably coated condition of the tongue which the patient said he always had, would suggest that these ulcers had been present for a long while, and it is surprising that they gave rise to practically no symptoms. Perhaps they owed their origin to the attack of typhoid fever in 1910. This is likely, but there is no direct evidence. Perhaps it was a simple streptococcal ulcer, such as one meets frequently in the stomach, and much less frequently in the œsophagus.[4]

The case is, I think, remarkable not only for its rarity, but also on account of the total absence of serious symptoms up to 26 hours previous to death, when some streaks of blood were noticed in some secretion which the patient spat out.

The only subjective signs were a certain degree of discomfort, not amounting to pain, in the chest on swallowing, especially on performing the act of swallowing without swallowing anything in particular, and also in drawing a deep breath.

The objective symptoms were a noticeably foul tongue (which the patient said he always had) and a small rise of temperature. never over 100°, which twice descended to normal after 24 hours in bed.

From this case one may learn that a quiescent chronic œsophageal ulcer may cause no symptoms at all if we except the coated tongue. When the process becomes active there will be discomfort or pain located indefinitely about the level of the ulcer back and front. It is only when perforation into a vessel, organ, or cavity occurs that a definite diagnosis can be made. Perforation into a vessel large or small, causes obvious symptoms. Perforation into the left pleural cavity, which, I take it, is the commonest site of perforation for an œsophageal ulcer, causes symptoms (subjective) very similar to those produced by perforating gastric or duodenal ulcers; but the physical signs in the one case are those of acute respiratory trouble (pleuritis), in the other acute abdominal (peritonitis). In the account of such a case of perforating œsophageal ulcer into the left pleural cavity by Dr. Graham W. Christie[5] two clinical points stand out and seem worthy of note: (1) The sudden pain and subjective symptoms caused by the perforation of an œsophageal ulcer into the left pleura suggested peritonitis, though in reality they were due to pleuritis, as was shown by absence of signs of general peritonitis; and (2) in perforating œsophageal ulcer the patient can sit up more comfortably than he can lie down, the opposite being the case in perforating gastric ulcer.

I have to thank Mr. Newlove, pathological assistant, Khartoum Civil Hospital, for helping me to put this little paper together.

Khartoum.

[4] Osler: Loc. cit.

[5] THE LANCET, 1915, ii., 17. Case of Perforation into Left Pleural Cavity (male, aged 60).

CHRONIC EMPYEMA: THE VALUE OF DECORTICATION OF THE LUNG.[1]

BY W. H. BATTLE, F.R.C.S. ENG.,
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IN this war there have of necessity been a large number of cases of penetrating wounds of the chest. In many of these there has been an accumulation of blood in the pleura of the side wounded which has cleared up after simple rest in bed. When dyspnœa, cough, or pyrexia has developed paracentesis has been most useful in effecting relief in the symptoms and a quick convalescence. There have been several excellent communications from the medical side which bear out this statement. Sometimes septic infection of the wound has been such that suppuration has taken place in the pleura, and the decomposing clot (and pus) has required evacuation through an incision into the pleura followed by drainage. When this operation has included resection of part of a rib, thus securing a larger opening, the result has been more uniformly satisfactory. In a smaller number closure of the empyema has been incomplete, and a sinus has remained which has proved a source of much discomfort and disability to the patient. Here there will usually be found a cavity of varying size in the pleura, the dimensions of which can be defined by means of a bullet probe, auscultation, and the X rays. This requires exploration under anæsthesia, with enlargement of the track, possibly combined with excision of overlying rib to ensure good drainage. The injection of bismuth paste has succeeded in some instances of moderate sinuses in civilian practice in effecting a cure, but until exploration has proved that no foreign body is there, and no fragment of bone is concealed behind the lowermost rib, its employment is not satisfactory after gunshot wounds. The cases in which the lung has not expanded after the first operation, remains collapsed and bound down to the side of the spine, are luckily few and far between. They are the most serious.

For the cure of an empyema of the most intractable kind, one in which the whole lung is bound down to the inner aspect of the chest cavity, and cannot expand, we have a difficult problem to solve. We are confronted by a cavity the walls of which are rigid and cannot come together to close the space, the ribs are unyielding and the lung so fixed that it cannot expand. It occupies a small part of the chest cavity and is quite functionless. With this local condition there is often a serious general state of exhaustion and emaciation owing to the effects of a prolonged discharge on a system already weakened by an attack of acute disease, or the severe shock of the wound of an important region. The state of the patient will naturally vary according to the duration of the mischief, the intensity of the infection, amount of purulent discharge, and accompanying pyrexia.

The fact that a lung might be released by removal of the covering membrane was not realised until recent years. We had to rely on operations calculated to permit an area of chest wall, which was adapted to the size of the suppurating cavity, to fall in to the level of the lung, from which no aid

[1] Abstract of a Clinical Lecture delivered on Jan. 10th, 1917.

was expected. This object was attained by removal of some of the osseous structure of the chest wall, as advised in the operations known by the names of Estlander, Schede, and Depage. In the worst kind of empyema, where the cavity extended to the dome of the pleura, portions of the ribs had to be removed from the lower part of the cavity to the apex. This procedure could not be completed safely at one sitting on account of the attendant shock. Most of us have done one or more of these operations, but with reluctance, for they are mutilating and appear very cruel during their performance. Yet they have been often instrumental in saving life, and ensure closure of the empyema. They resulted, however, in a serious deformity of the chest, and in young people lateral curvature was certain to develop. The most important drawback, however, was the permanent loss of the use of the collapsed and imprisoned lung. The patient was sadly handicapped for the rest of his life by this. Occasionally this operation was accompanied by so much shock and loss of blood that he did not long survive it.

Of these operations the one which is known by the name of Schede has proved most useful, because not only are the ribs excised over the cavity to be obliterated, but the soft structures which have shared in the inflammatory changes which have spread through the costal pleura and become rigid, are also taken away. The remaining soft parts then fall in easily and do not form a rigid wall during later life. Failure generally resulted from inadequate removal of bone.

It is not easy to say to whom the idea of freeing the imprisoned lung, and so obtaining the restoration of what was for all purposes a lost organ, and at the same time a cure of the disease, first occurred. It may be that the possibility of this presented itself to many surgeons and pathologists at various times and in different countries long before the operation was put to the test. In these strenuous times it is not possible to go very closely into the history of the operation. It may be mentioned, however, that Terrier [14] states that Cornil first made the observation that the lung when bound down in chronic empyema could be relieved by removal of the overlying membranous layers so that it might once more expand. The application of the idea to operative surgery is rightly credited to Dr. G. Riverson Fowler,[1] who operated for the first time on Oct. 7th, 1893. He independently came to the conclusion that the fixation of the lung in cases where it did not expand in old empyema was due to a greatly thickened pleural covering which could be safely removed.

His patient was a man who had been ill for two years and the result fulfilled his anticipations. The lung was retracted to the costo pulmonary angle above the third rib. "The pleura was isolated by blunt dissection in the direction of the diaphragm until the latter was reached, then peeled off from the latter till the limit towards the mid-line was reached, when it was found to rest against the displaced pericardium, from which, after much difficulty, it was finally detached. This dissection was greatly impeded by the movements of the diaphragm, as well as those of the heart. It was completed by lifting the mass and finally detaching it from the lung above." Considerable expansion of the lung at once ensued and in 24 hours there was vesicular murmur to the level of the seventh rib.

Delorme,[2] to whom Dr. Lund [14] thinks most of the credit should be given for the introduction of the operation, made some experiments on the cadaver with a view of finding a better method of treating old empyema. He reported the results of his experiments to the Congrès Français de Chirurgie about April, 1893. His first operation was performed on Jan. 20th, 1894. The empyema was a tuberculous one and the patient died. His conclusions as to the possibility of freeing the lung have been fully confirmed. It is unlikely that Fowler knew of the experiments of Delorme, and therefore he is entitled to the credit which rightly belongs to the surgeon to whose initiative we owe an improved and successful method of operation for an intractable disease.

At intervals since the publication of Fowler's successful case, contributions have been made to various professional journals in other countries, to which reference can be made by those interested, which confirm Fowler's original estimate of the value of decortication. Modifications have been suggested which have lessened the severity of the operation which he performed at first, thus diminishing the shock produced, which is about the same as that which follows the operation of Schede.

Delorme [2] made a square flap from before backwards, the upper and lower margins following the lines of the third and sixth ribs. This was turned back on the soft parts as a hinge, which was at the anterior border of the scapula. It was afterwards replaced. It has been advised (probably from want of appreciation of the toughness of the enclosing envelope) that incisions sufficient to admit of fingers entering to separate the adhesions should be made. Much time will, however, be saved by the rapid formation of a flap of sufficient size to permit of certain and quick manipulation of the membrane to be removed.

The best time to perform the operation is when a patient with an empyema has recovered from the effects of the operation for evacuation of the pus, and there are still no signs of expansion of the lung. It has been successfully carried out more than three years (O'Dowd) after excision of a portion of rib followed by drainage. The lung even then expanded well and quickly.

In many it is inadvisable to remove ribs, or if sections of the ribs are removed the periosteum and muscles, with other soft parts, may be left. The lung expands in a surprising manner, and of itself may fill up the chest cavity. The importance of the maintenance of a rigid chest wall is evident.

The management of the partly organised material which covers the costal pleura and lung will vary, and surgeons recognise that it is unnecessary to strip off the casing from the pleura and diaphragm as well as from the lung. The object of the operation is to permit of expansion of the lung, and that is effected by limiting the stripping to the covering of the lung itself and the pleura adjoining where the new membrane is thickest. It is not needful to remove the whole of the covering of the costal pleura with the thickened costal pleura also as at first advised. This may be left untouched; the duration of the operation is thus shortened, the loss of blood diminished, and the shock rendered less severe.

The membrane which holds down the pleura may be very thick or very tough, therefore the difficulty in finding the lung will vary. It has been described as over one inch in thickness in one case. The incision should be made into it towards the posterior aspect, commencing above and deepened till the bluish-grey colour of the lung is seen; it is then prolonged to this depth for a varying distance with a pair of blunt-pointed scissors, and the lung at once begins to push through. By taking hold of the membrane on the posterior and then on the anterior aspect of the incision, beginning towards the apex, the whole lung is cleared. The amount of immediate expansion is often considerable, and the lung tends to fill the cavity in a few minutes; for this reason the more accessible parts should be left until the last. The hæmorrhage is slight.

Ransohoff [3] has advised that the membrane should be treated by the making of multiple incisions (described as "discission of pleura" and "gridironing") at right angles to each other, about a quarter of an inch apart, down to the lung. In cases where there is close adhesion to the visceral pleura this might prove of advantage, especially in tuberculous disease.

The loose attachment of the membrane in most patients renders its complete removal easy, and expansion is more complete. Slight injury of the lung in the process of stripping is of little importance, and hæmorrhage is not great. One case of non-expansion during operation is recorded. Possibly more have been met with, but this should not prevent an attempt to free the lung in any patient in whom it appears reasonably likely to succeed. The prognosis in chronic empyema of tuberculous origin is not good. Occasionally fibrous bands are found passing from the membrane into the lung; these should be divided without hesitation. Even inseparable adhesion between the lower lobe and the diaphragm may not hinder a satisfactory result. Fuller expansion may be obtained during the after-treatment and contact of the lung secured with the chest wall by the method of blowing water from one bottle to another by means of a tube. It is not necessary to stitch the lung to the costal pleura, although it has been done with success by some surgeons.

The communication from Mr. Spencer [20] on "decortication for traumatic empyema with complete collapse of the lung" is the only one on this subject which has been published in this country so far as I can ascertain. There are, however, references made to this operation in some of our own text-

books. Unfortunately, these are occasionally founded on a complete misconception of the pathology of the disease and a wrong estimate of the benefits which may be obtained from "decortication."

The question of the anæsthetic which should be used may cause some anxiety in these cases; probably every kind has been tried, including intraspinal injection, but in the following case, where the ultimate result has been so satisfactory, Dr. Z. Mennell kindly gave ether by the intratracheal method. The condition of the patient was satisfactory throughout the operation and respiration perfectly unembarrassed.

At the present time there are several empyemata in the beds under my care at St. Thomas's, in some of which it may be advisable to do decortication of the lungs. The following has proved conclusively the great benefits to be derived from it:—

Captain ——, aged 28, was admitted to St. Thomas's Home from France on April 23rd, 1915. He had received a perforating wound of the left side of the chest on March 10th during the fight at Neuve Chapelle. He could not be moved for some days, but an operation was done at the base hospital on March 24th, the day after his arrival there, when a portion of rib was excised and a tube put in. "So much pus came away that the quantity could not be measured." On admission to St. Thomas's he was using a drainage-tube which passed through an opening in the sixth rib in the mid-axillary line, and from this there was a profuse purulent discharge. Above the spine of the left scapula there was a sinus with granulating opening which led to a comminuted fracture of the underlying ribs. Both wounds were septic, and he was thin and anæmic, had a rapid pulse, with a temperature which was always higher in the evening (99°–101° F.). He complained of considerable pain in the side, especially at night, and it was necessary to give morphia to relieve this. There was also a paroxysmal cough with much frothy expectoration.

His general condition improved enormously during the next few weeks, and the morphia was gradually discontinued. Attempts were made to leave out the large tube as the quantity of discharge diminished, but they were not successful. There were no signs of expansion of the lung. The breath sounds were absent excepting quite at the apex, and the whole of the left chest was in a condition of pyopneumothorax. As this appeared to be stationary and the general state was much improved, on the advice of Dr. Hector Mackenzie the chest was explored with the view of doing decortication of the lung.

On May 21st, a month after admission, a large oblong flap was made, parts of the fourth, fifth, sixth, and seventh ribs removed above the sinus, and the thoracic cavity quickly opened up. The lung was covered with a thick greyish-yellow, wash-leather membrane which prevented expansion and fastened it down to the posterior and inner part of the space. The cavity extended upwards in the direction of the apex and was apparently limited only by the dome of the pleura. A strip of this dense membrane was now separated with difficulty from the surface of the lung, beginning at a point as high as possible, to the lower limit of the cavity, and from the raw surface thus made the membrane was peeled forwards and backwards. The lung quickly began to expand, and by the time the process of stripping was completed was almost in apposition with the chest wall, in the position of full inspiration. The bleeding was slight. No attempt was made to peel off membrane from the costal pleura or diaphragm. A tube was placed in the lower part of the cavity and the flap sutured in position with catgut after all débris had been washed away with sterilised saline.

There was considerable shock after the operation, but the patient rallied well. For the next few days the chief menace came from attempts at œdema of the right lung, giving rise to dyspnœic attacks associated with a frothy exudate which was profusely expectorated. Relief was almost immediate after the exhibition of atropine hypodermically.

The recovery was somewhat slow, as it was a long time before it was possible to give up the use of the drainage-tube, various attempts to do so being unsuccessful on account of a re-accumulation of discharge. Towards the end of September it was found possible to omit it, and by Nov. 22nd, 1915, he was able to leave for the seaside with the wound closed.

Bacteriological examination showed that the *Streptococcus pyogenes* was the chief organism at work, but there were several others, and it was not considered possible to make a vaccine which would have been of use before operation.

Dr. Hector Mackenzie kindly examined this patient on Jan. 9th, 1917, and has reported as follows: "There was good resonance and vocal fremitus, and the breath sounds were well heard over the whole of the left lung down to the base. The left lung appeared to be expanded and to be acting efficiently. The general condition was very satisfactory."

Continued at foot of next column.

REPAIR OF LARGE BONY DEFECTS IN THE SKULL BY MEANS OF A METAL PLATE,

WITH A RECORD OF THREE CASES.

BY C. NOON F.R.C.S. ENG.,

MAJOR, R.A.M.C.; CHIEF RESIDENT SURGEON, THE NORFOLK WAR HOSPITAL.

In the large majority of cases in which there has been loss of substance of the bony parts of the skull, either from trephining or direct injury, there is no need of any operation to repair the bony defect. When only a small piece of bone has been removed by trephining, the edges of the trephine wound will become rounded off and smooth, and the hole in the skull will become filled with dense fibrous tissue, so that after a lapse of six months the defect will be hardly palpable. There are, however, a certain number of cases in which some operation for repair of the extensive damage done should be undertaken. Different methods have been described. Maget has recorded cases of restoration of cranial substance by insertion of an osteoplastic flap cut from the external table of the skull in the vicinity. Morestin has described the use of cartilaginous transplants, while Ester has related a series of cases in which he repaired the skull after trephining by means of gold plates. The recorded cases would suggest that the method of repair by means of a plate is satisfactory, simple, and easy.

Indication and Contra-indication for Operation.

There has been considerable discussion as to whether defects in the skull should be closed, but most surgeons would probably now agree that, briefly stated the indications that some operation should be done are as follows:—

The hole in the skull, if large, should be closed for the sake of freeing the patient from the dangers to which he is subjected by having the brain insufficiently protected, and because the bones of the skull regenerate scarcely at all.

The mental condition of many patients with head wounds is often markedly affected. It is important before doing any plastic operation to observe the patient carefully and to be satisfied that his mental state is good. The best results in these cases will be obtained by operating on patients who are anxious to have "the hole" in the head closed. Those on whom I have operated were all much troubled by the fact that they could feel a large gap in their skulls, and they were all very anxious to have it closed.

Pain.—There are two main types of pain from which these cases suffer—namely, headache and severe tenderness in the region of the scar. The headache varies much in severity; all the cases which were operated on complained of it, but it was not of a very severe type. All were improved by the operation. Tenderness over the scar was in one case so severe that the patient could not wear even a soft cap. The operation completely cured this in every case.

Continued from preceding column.

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Inability to sleep is occasionally complained of. This was a prominent symptom in two of the cases operated upon. The operation improved both cases.

Pulsation of the brain over the trephined wound was complained of by all the patients operated on. Though not a severe symptom, it appeared somewhat to worry them. The operation cured this in every case.

The condition of the scalp is most important. The scalp wound must be absolutely healed before any operation can be considered. An unhealed scalp is an absolute contra-indication to any operation.

Operation.

Preparation.—The whole head is shaved 36 hours, and again prepared 4 or 5 hours, before the operation. Morphia ¼ grain and atropine $\frac{1}{150}$ grain are given half an hour before the anæsthetic is administered.

Operation.—The head is supported on a sandbag or special rest at a convenient height. A large semilunar incision is made with its base below. The flap should be so arranged as to expose fully the previous trephine hole with a margin of about 1½ inches of skull bone surrounding it. The incision at the margin of the wound divides all the layers of the scalp with the exception of the periosteum. The flap is then dissected up from the periosteum for about ¼ inch at its margins. The periosteum is then divided, and the remainder of the flap consists of all the layers of the scalp, together with the periosteum. At the margin of the trephine hole a quantity of scar tissue will be encountered. It is usually possible to separate it by a series of cuts without any exposure of brain tissue, so that when the centre flap has been raised the trepnine hole is exposed, "plugged" with dense fibrous tissue. During the process there is usually free bleeding from the edges of the wound, but a few tissue forceps applied to the edge of the flap are sufficient to stop this, and no tourniquet round the head is necessary. The edges of the flap are then covered with gauze and saline at 118° F. is poured over the wound to stop any general oozing. The edges of the periosteum are then raised from the bone, and the plate, suitably cut, is passed under it, and pressed down flat on the skull. It is fixed in position by a few catgut sutures, the skin is then sutured over the plate, and if necessary a drainage-tube is inserted at one corner of the wound. Dressings are applied with firm pressure. The tube is removed at the end of 48 hours, and the wound is not again disturbed until the tenth day, when the stitches are removed.

Notes of Cases.

CASE 1.—Gunshot wound of head; destruction of part of right parietal bone; repair by metal plate. Patient aged 24. R.F.A., was transferred to Norfolk War Hospital on April 11th, 1916, complaining of pulsating swelling on right side of head. He was admitted to 15th General Hospital at Alexandria on Feb. 8th, 1916, with injury of right side of head. He was found to be suffering from cerebral compression, giving rise to paralysis of left arm and leg. An operation was done, skull trephined, dura mater opened, and a quantity of blood-clot removed from the surface of brain. He had since suffered from severe headache, with pain and tenderness over wound. The headache was severe, often keeping him awake at night, and the pain and tenderness over the wound were such that he could not wear a cap without discomfort. The pulsating swelling on side of head had gradually decreased and he had quite recovered from paralysis of left arm and leg. He had had no fits, his memory was good, and his mental condition was unimpaired.

On admission to Norfolk War Hospital (April 11th) he was rather pale, but otherwise healthy-looking. Temperature 98° F., pulse 80, respirations 20. Eyes—pupils equal and reacted to light. Tongue protruded straight; no facial paralysis, all cranial nerves appeared natural; mental condition good. In region of right parietal bone was well-marked pulsation, both seen and felt. The operation wound was almost quite healed. On palpation skin over pulsating area was markedly tender; margins of trephine hole could be easily felt; no well-marked cerebral hernia. June 1st: Wound quite healed.

June 29th: Operation; hole in skull closed by silver plate. Wound healed by primary union. Patient was discharged from hospital much improved, all his symptoms having disappeared except occasional slight headaches. The plate in head could scarcely be felt, and gave rise to no trouble.

CASE 2.—Shrapnel wound of head; destruction of part of parietal bone; repair by metal plate. Private, aged 26, was wounded in head by piece of shrapnel in May, 1916. Soon after being wounded he was trephined at a casualty clearing station; piece of right parietal bone removed. Progress was satisfactory, and he was admitted to Norfolk War Hospital on May 15th. On admission his general condition was good. Temperature 98° F., pulse 80, respirations 20. Memory for recent events poor. Did not complain of any headache. Cranial nerves appeared natural. No paralysis, but slight weakness of left leg. Wound over right parietal region still required dressing; pulsation over this area seen and felt; no cerebral hernia. The wound healed well, and he was discharged to an auxiliary hospital on June 6th. When again seen on August 10th the head wound had quite healed; scar firm and not tender. He complained of severe headache and said the "hole" in the head worried him very much. His mental state appeared fair, his memory had improved.

August 26th: Operation; hole in skull closed by plate. Wound healed by primary union, but four days after operation he became somewhat depressed and refused food. His mental condition gave rise to some anxiety for about 14 days, but he gradually improved and left the hospital apparently quite well on Sept. 17th. The plate in the head could not be felt, and gave rise to no pain or inconvenience.

CASE 3.—Shrapnel wound of head; destruction of part of parietal bone; repair by metal plate. Private, aged 22, wounded in head about June 28th, 1916; was trephined two hours afterwards at a casualty clearing station, and piece of right parietal bone removed. On June 30th he was transferred to Calais, and on July 4th was admitted to the Norfolk War Hospital. On admission his condition was as follows: Temperature 98° F., pulse 80, respirations 20. Mental condition good, cranial nerves normal. No paralysis. Wound over right parietal region; pulsation marked, but no cerebral hernia. His progress was satisfactory, the wound healed, and he was sent to an auxiliary hospital on July 31st. When seen again, on Sept. 4th, he complained of headache, pain in scar, and pulsation of brain troubled him, especially when he moved about. His mental condition was good. On Sept. 19th the hole in the skull was repaired by means of a plate; wound healed by primary union. At end of ten days he was able to get about again. He still complained of headache, but this gradually improved, and he was discharged from the hospital in December. The wound was quite healed and painless. The plate could not be felt and he was much improved by the operation.

A CASE OF ACUTE OSTEOMYELITIS OF THE SPINE.

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THE following case of acute osteomyelitis of the spine, recently in the Royal Naval Hospital, Plymouth, is recorded on account of its rarity and the interesting problem in diagnosis which it raised.

The patient, aged 21, schoolmaster R.N., went sick ashore on Sept. 23rd, 1916, complaining of "severe pain in the back and left loin." He stated that he had had a cold in the head about a week before, and that the pain, which he had at first treated as lumbago, had started two days before. He had otherwise been in good health, and had not had any injury. When first seen his temperature was 103° F., and he looked ill. No physical signs were found to explain the pain, and as the symptoms were not relieved by simple remedies he was admitted to hospital on Sept. 25th, under the care of Fleet-Surgeon R. St. G. Bond, R.N.

On admission his temperature was 102°, pulse 102, respiration 32. His skin was dry and flushed, his tongue very dry and beefy-red, and his general appearance suggested a severe toxæmia. He complained of constant pain in the small of the back, radiating round the loins to the umbilicus, the pain being more severe on the left side. There was tenderness to pressure over the upper end of the sacrum and the lower lumbar spinous processes, and the patient could not move freely or sit up, but there was no swelling or deformity of the back. The abdomen was somewhat distended and tympanitic. There was deep tenderness on both sides in the middle line in the umbilical region but no rigidity, and the abdomen moved freely with respiration. There were no abnormal signs in the chest. The urine was normal.

The condition remained much the same on the following two days, the temperature fluctuating between 99° and 102°, the pulse remaining rapid and the patient looking very ill. On Sept. 27th lumbar puncture was done and 3 oz. of thick creamy pus withdrawn from the spinal canal. From this *Staphylococcus aureus* was subsequently grown. There were no symptoms pointing to meningitis, and it was therefore thought probable that the pus was of extrathecal origin. The same afternoon some paresis of the legs, more marked in the left, developed, suggesting pressure on spinal roots. The knee-jerks were obtainable but weak, and plantar reflexes were flexor. In consultation with Surgeon-General G. R. Turner and Fleet-Surgeon Bond a provisional diagnosis of acute osteomyelitis of the spine was made, and laminectomy decided upon to relieve the pressure upon the cauda equina and to establish drainage.

Operation.—A median dorsal incision was made with the centre over the third lumbar spine. On separating the muscles from the left of the spines about 3 oz. of pus were evacuated; no bare bone could be felt by the finger and the pus appeared to be oozing out of a neural foramen. The third lumbar lamina was removed and similar pus at once welled out of the spinal canal. On mopping this away the theca was seen to be intact and pressed forwards against the posterior common ligament. No bare bone was found, and in the absence of any definite localising signs nothing further was done. A tube was inserted down to the spinal canal and the wound stitched up round it. The patient did not suffer shock, but there was no improvement in his condition the following day, except that the paresis of the legs was no longer present. In the evening his temperature reached 104°, his pulse rapidly became worse, and he died from heart failure on Sept. 29th. There were no symptoms of meningitis before death.

Autopsy.—On the same day an autopsy was performed. On stripping the psoas muscles from their origins pus was found oozing out of all the lumbar neural foramina into the muscles, where several small and separate pockets had formed. The pus had in addition tracked along the posterior primary divisions of the nerves into the lumbar muscles on each side. On opening the spinal canal pus was found on the posterior aspect of the theca extending from the last dorsal vertebra to the lower end of the sacrum; no extrathecal fat was visible, there was no leptomeningitis. The bodies of the vertebra and the sacrum were minutely examined for an infective focus without success, but it is regretted that the laminæ and transverse processes escaped a close examination owing to their being put aside and mislaid. All the thoracic and abdominal viscera were normal and no septic focus was discovered elsewhere in the body.

Etiology.—Acute osteomyelitis of the spinal column is fortunately a very rare disease, and in his exhaustive paper on the subject, written in 1911, P. Grisel[1] was only able to collect 85 recorded cases.

Like acute osteomyelitis of the long bones, it is essentially a disease of the growing skeleton, and—remembering that growth of the spinal column is not complete until the thirtieth year—it will be found that only one case (reported by Makins and Abbott[2] in a woman aged 46) does not fall into this category. The majority of cases occur during the second decade of life, and there are only 15 recorded in patients over 20. A history of injury in the form of a blow or a sprain of the back is forthcoming in about one-quarter of the total number, a fact which may explain the relative frequency of the disease in males rather than females (2 : 1); in a larger number there is some discoverable source of infection, very commonly furunculosis. The responsible organism is almost exclusively *Staphylococcus aureus*; *Staphylococcus albus* and *Streptococcus pyogenes* have been rarely found.

Morbid anatomy and pathology.—Any portion of the vertebral column may be affected, but the disease shows a preference for the lumbar vertebræ, which form its site in rather more than 50 per cent. of all cases. The cervical column comes next in frequency and the dorsal column last.

The infection may be limited to the body of a vertebra or to some part of the neural arch, and it may affect one vertebra only or several simultaneously. Further, it may take the form of a simple periostitis without massive necrosis, but more commonly occurs as an osteomyelitis with more or less extensive necrosis.

The gravity of the disease varies largely with its depth from the surface of the body; when the centrum alone is affected the mortality is as high as 60 per cent., while when the neural arch alone is affected it is as low as 25 per cent., and if it were not that in these latter cases the liability to an intraspinal spread is greater, the difference would be still more marked. The reason for this difference is purely an anatomical one. When the focus is in the body of a vertebra the pus usually collects in front of the vertebral column and forms a retropharyngeal, mediastinal, or psoas abscess, according to the level of the disease. When, on the other hand, the focus is in the neural arch the pus naturally tracks posteriorly and points in the back. It is clear that it there permits of earlier recognition and treatment. An acute retropharyngeal abscess may be recognised with equal promptitude, but a mediastinal and a psoas abscess necessarily remain undetected for a longer period, and indeed an acute psoas abscess has only once been opened during life. Not uncommonly an anterior and posterior abscess may develop simultaneously, and the cavities may then communicate with one another. Makins and Abbott[2] record two cases in which an abscess forming primarily in the psoas sheath tracked to the buttock, passing in the one case through the great sacro-sciatic foramen, and in the other over the crest of the ilium.

Of complications the intrathoracic are the most frequent—empyema, pneumonia, abscess in the lung. They may arise by direct spread or by pyæmia. They call for little comment. Intraspinal abscess has been recorded in 31 out of 85 cases, and 21 of these proved fatal. In 12 cases the bony focus was in the bodies, and 11 were fatal. In 19 cases the focus was in the neural arch, with 10 deaths. It is a complication, therefore, which is far more grave where the focus is anterior to the cord. In origin the abscess is always extrathecal. It may be localised by adhesions and then has been known to cause a compression either of the cord or of the cauda equina, which in one case (Hunt[3]) was relieved by operation; but it is more usually diffuse: meningitis and meningo-myelitis may follow by lymphatic spread, without actual perforation of the meninges, and are always fatal. The only recorded cases of actual perforation of the meninges have resulted from operation (Lucas,[4] Rebizzi[5]). Cerebral abscess and cerebral meningitis have been known to occur by pyæmic invasion (Makins and Abbott,[2] Joel[6]).

Symptomatology.—Clinically, the cases fall into two groups.

In the first or fulminant form, fortunately the less common, the patient is taken suddenly and acutely ill with intense pain in the back, a rigor, high temperature, and all the signs of a grave intoxication, and dies within a few days before any local manifestations have appeared to permit of an accurate diagnosis. This group includes the more severe cases with the focus in the body of a vertebra, and the deep-seated abscess which forms is only recognised at autopsy.

The second and larger group presents a clinical picture which in its simplest form closely resembles that of osteomyelitis of the long bones. The onset is abrupt, with localised pain in the back, pyrexia, and the accompanying signs of an acute infection. On the first examination the affected part of the spine is found to be tender and rigid; the patient assumes the supine position and cannot move without severe pain, but there is no swelling of the back. After the lapse of a few days a swelling appears to one or both sides of the mid-line of the back. At first hard and brawny, with dilated veins upon its surface—a point on which Lannelongue[7] lays stress—the mass gradually softens and is recognised as a pointing abscess. The subsequent progress of the case varies with the gravity of the infection and the extent of the complications. Under favourable conditions a sequestrum is found loose at the bottom of the abscess and is removed, the severe symptoms subside, and the drained cavity slowly heals. In a large number of cases, however, the course is by no means so smooth. Symptoms arise which betray the existence of intraspinal suppuration or of the persistence of the infective process, and all too commonly the patient succumbs to meningomyelitis or septicæmia.

Diagnosis.—The difficulties in diagnosis arise entirely in the early stages before the local signs of an abscess have developed, and are well illustrated by the case cited in this paper. The problem necessarily varies with the portion of the spine involved, but in every case the cardinal factor is the co-existence of (*a*) a grave toxæmia, and (*b*) persistent, localised pain, tenderness, and rigidity of the back.

The clinical picture may be said to resemble a condensed epitome of Pott's disease without deformity. Thus in the case reported there was first (*a*) localised pain over the lumbar spine, shortly followed by (*b*) girdle pains round both loins, and accompanied by (*c*) local tenderness, rigidity, and pain on movement, and finally followed by (*d*) the signs of compression of the cauda equina. It is by laying stress on the occurrence of some or all of these signs in association with the evidences of an acute infection that a diagnosis may be arrived at in the early stages. The appearance of an abscess may be delayed for several days, and although operative treatment, which alone offers hope of saving life, must be postponed until this decisive evidence appears, it is clearly of the greatest importance to recognise the disease at the earliest moment, in order not only to prevent the patient from being subjected to the consequences of a mistaken diagnosis, but also to concentrate the attention on the back, and ensure interference as soon as opportunity offers.

The possibility of locating an abscess in the muscles of the back by an exploring syringe at the first stages of induration must be borne in mind, for valuable time may be saved by acting before the abscess is pointing superficially. In the case reported the diagnosis was made as a result of a lumbar puncture undertaken in order to exclude meningitis; with one exception this is the only recorded case in which a diagnosis has been made in this way. The danger of infecting the meninges is so obvious that it cannot be recommended as a routine method of examination. At the same time, owing to the close connexion of the theca with the posterior common ligament, an extrathecal collection will tend to form behind and not in front of the cord, so that the risk is thereby minimised, and if there is clear

evidence that compression paraplegia has developed, lumbar puncture would seem to be a legitimate procedure.

Differential diagnosis.—The differential diagnosis necessarily varies with the part of the spinal column affected.

(*a*) When the focus is in the cervical column there is less chance of an error than elsewhere. A deep glandular abscess may be excluded by the fact that pressure on the vertex causes referred pain in the neck. Makins and Abbott also lay stress on the early widening of the neck from extensive œdema, a sign which points to the shutting up of a small quantity of pus deep in the neck. Meningitis may be excluded by the absence of mental changes and rigidity of the limbs.

(*b*) Occurring in the dorsal spine the disease has been taken for pneumonia, empyema, typhoid, and peritonitis. Either pneumonia or empyema may result from a forward extension of the abscess, and the mistake is therefore usually that of regarding them as the main disease rather than as complications. Enteric may be simulated when the vertebral bodies alone are affected and the patient rapidly lapses into a "typhoid state," the abscess being totally concealed. The early localisation of pain and the abrupt onset are the features which should focus attention on the spine. Enlargement of the spleen may occur in either case, and is therefore of no diagnostic significance. The confusion with peritonitis is referred to below.

(*c*) In the lumbar spine the disease has been mistaken for peritonitis, perinephric abscess, meningitis, and Landry's paralysis.

The confusion with peritonitis is due to the frequent occurrence of referred abdominal pain and of abdominal distension. The latter has been noted in several cases and has been variously attributed to the acute toxæmia and to involvement of the sympathetic chain in the abscess. But the mistake is one which should not occur if attention is paid to (i.) the character of the pain, its point of earliest onset and greatest intensity, and to (ii.) the relative mildness of the abdominal symptoms compared with the gravity of the general condition.

Perinephric abscess may be harder to exclude on account of the time that it may remain latent while causing grave symptoms. The points of difference are that perinephric abscess causes entirely unilateral symptoms, with the point of greatest pain and tenderness in the loin external to the erector spinæ, while the symptoms of osteomyelitis are central or bilateral, and the abscess when it points comes to the surface either through or internal to the erector spinæ, but not outside it.

Meningitis and Landry's paralysis are only likely to be considered in those cases in which there is a rapid intraspinal spread of suppuration, and it is then that a lumbar puncture may be used. If pus be found Landry's paralysis is excluded, and the presence of staphylococci should at once lead to the diagnosis of acute bone infection, which alone can cause a primary staphylococcic meningitis. The possibility of cerebro-spinal meningitis should be definitely excluded by the limitation of symptoms to the back, and by the absence of mental changes and other signs of involvement of the cerebral meninges.

Treatment.—Treatment consists in (*a*) finding and draining the abscess, and (*b*) as far as possible removing the bony focus. The actual operation required necessarily varies with the individual case.

1. The simplest and most frequent procedure consists in incising and draining a pointing abscess and removing any loose fragments of necrosed bone. This has been done in 41 recorded cases, and the statistics show, as might be expected, that it is most successful where the bony focus is in some part of the neural arch. Of the 41, 26 were of this category, and 22 recovered (84 per cent.). In 15 the focus was in the body of the vertebra, and only 7 recovered (47 per cent.). In some a part of a vertebra has been found loose in the cavity and has been removed at the time of the operation. In a few a subsequent operation has been necessary for the removal of a sequestrum. The operation may be regarded as the routine treatment for osteomyelitis of the neural arch.

2. More elaborate treatment has only been undertaken in 14 cases, where bone has been freely removed in order to drain an extrapleural or extradural abscess, or to remove an extensively diseased portion of a vertebra. The results have been encouraging, for 11 of these 14 cases recovered (78 per cent.), and it must be borne in mind that they were severe cases where the total mortality is high. Laminectomy has been reported seven times for extradural suppuration, and in 5 cases (Hunt,[3] Donati,[8] Morian,[9] Riese[10]) has been successful. Costo-transversectomy has been successfully performed once to drain an extrapleural abscess (Israel[11]). In the present case it was certainly entirely unsuccessful in establishing free drainage, and arresting the course of the disease. But the autopsy showed that the failure was due to the wide diffusion of the pus into the psoas muscles and round the theca, and the result is therefore a condemnation not of the operation but of the delay in operating. The figures quoted offer the hope that the present high mortality might be materially reduced if the disease could be recognised and treated at an earlier stage.

I am indebted to Deputy Surgeon-General V. G. Thorpe, R.N., and Fleet-Surgeon R. St.G. Bond, R.N., for permission to publish the case.

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THE CLOSURE OF COLOTOMY OPENINGS PERFORMED FOR WOUNDS OF THE RECTUM.

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A TEMPORARY colotomy—that is to say, one which is not intended to be permanent—is a rare condition in civilian practice, and consequently the operation for closing such openings is not often performed. But with the commencement of the present war it was quite early recognised by those surgeons treating cases at the Front that bowel wounds involving the rectum or pelvic colon could only be treated satisfactorily by the immediate performance of a temporary colotomy, so as to deflect the fæcal contents and enable the wound to be treated without fæcal contamination. Quite a large number of such injuries treated by temporary colotomy are now to be found in the military hospitals; in one week alone I have personally seen three patients who have been sent over from the Front with temporary colotomies due to wounds involving the rectum. It is obvious that an operation for the closing of the colotomy opening will be necessary in all these cases before the patient can be said to have completely recovered from his wound or to be again fit for service, and there are probably very few of the cases in which this will not be possible. As surgeon to St. Mark's Hospital I have probably had an exceptional experience of such cases, for I have frequently operated for the closure of a colotomy, and it seems to me that the present is a good time to place on record my experience, as it may prove of some value now that a number of such operations will have to be performed.

In my book, "Diseases of the Colon," published in 1910, several pages were devoted to this subject, but my experience since has led me somewhat to modify the views there expressed. It is unfortunate that the operation for closing a colotomy is by no means free from risk. The following table, which is taken from my book, shows the results in 36 cases collected from various sources previous to 1910:—

Opening closed successfully	16
First operation failed	9
Repeated operations failed	6
Patient died as the result of operation	5
	36

It should, however, be stated at the present time, at any rate in the hands of good surgeons, the risk of failure is certainly not as great as these figures seem to show. In the last two years I have closed eight such openings at the first attempt without a failure. There are two methods available for closing a colotomy: (1) destruction of the spur with subsequent closure of the skin opening; and (2) immediate closure by resection and suture. Of these the first is the easier and by far the safer. The only objection to it is that the condition left is not quite normal, as the bowel remains attached to the abdominal wall and there is often a weak spot which may necessitate the wearing of a belt or support. The second method is attended with decided risks and should not be attempted by anyone who has not had experience of end-to-end anastomosis of the large bowel, but it has the advantage that anatomical restitution of the parts is secured. It is, of course,

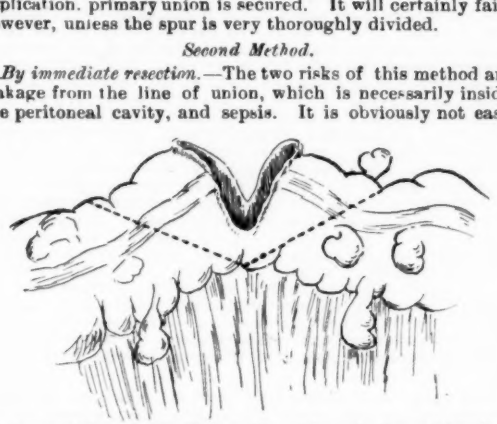
obvious that no attempt should be made to close the colotomy until the original wound in the rectum is quite soundly healed, and, in fact, it is wise to postpone the operation till all the wounds are healed, whether they communicate with the bowel or not.

First Method.

By destruction of the spur.—For this an enterotome is required. The two best forms of this instrument are one in which a male blade fits into a double female blade, the blades being made of thin steel and with a waved edge, and a second form with ribbed parallel blades in which one blade is provided with spikes which fit into holes in the opposing blade. The enterotome should be put on as follows: The first and second fingers of the surgeon's left hand are passed into the bowel, one finger in the upper and one in the lower opening, and are moved about until only the double thickness of bowel wall can be felt between the fingers. The enterotome, with the blades open, should then be passed into the bowel along the fingers with one blade in each portion of bowel, the fingers acting as guides. At least 3 to 3½ inches of the spur should be caught between the blades at the first application, and the blades should then be screwed firmly together to prevent any possibility of slipping. The spur must be completely divided for from 3 to 4 inches, rather more, in fact, than appears to be necessary. This is to allow for cicatricial contraction in the subsequent join. If possible the spur should be completely removed, so that no spur at all can be felt after the instrument is separated. This will certainly require more than one application of the enterotome. I have never known it to take less than two applications. The screw at the back end of the enterotome should be tightened up each day until it is as tight as it will go. The instrument generally causes a certain amount of pain during the first 24 hours for which, if necessary, morphia must be administered It takes from four to five days for the instrument to become loose, and a day or two should then be allowed to elapse before applying the instrument to what is left of the spur. When the spur has been completely divided an operation should be done to close the external opening. The mucous membrane should be separated from the skin and muscles and inverted with catgut sutures, and the muscles and deep parts closed over it, also with catgut. As there is considerable risk of sepsis it is advisable to provide a drain. The drain, however, should not be placed through the original wound, but through a stab wound made 2 inches away from the primary wound. As a rule, by this method, which is comparatively safe and easy of application, primary union is secured. It will certainly fail, however, unless the spur is very thoroughly divided.

Second Method.

By immediate resection.—The two risks of this method are leakage from the line of union, which is necessarily inside the peritoneal cavity, and sepsis. It is obviously not easy



to be certain of sterilising the skin of the abdominal wall and the mucous membrane of the colotomy opening, and failure to secure this will result in peritonitis or sepsis in the wound. The bowels having been previously thoroughly cleared, the abdominal wall and the mucous membrane of the colotomy opening should be well iodined. The mucous membrane of the opening should then be carefully dissected out and closed with silk sutures. The wound should be dabbed over with iodine again and the instruments and gloves changed. The wound should then be deepened on one side until the peritoneal cavity is reached and opened. With one finger inside the abdomen the bowel should be separated from the skin all round with scissors and the loop drawn well out of the abdominal cavity. The whole wound area should then be carefully packed off with towels or large swabs. No attempt should be made to stitch up the original opening in the colon, but the involved portion of colon should be cut out by a V-shaped resection, the apex of the V being towards the mesenteric attachment and the base containing the original opening (see illustration). It will generally not be necessary to cut through the bowel at the mesenteric attachment, but those portions opposite the mesenteric attachment should be freely cut away on both sides of the opening. It will be seen that the bowel is cut across very obliquely; this ensures a good and uniform blood-supply to the whole of the cut edge, which would not be the case if the bowel were cut transversely. It also ensures the lumen of the bowel at the point of union being, if anything, larger than the normal lumen, which compensates for any subsequent contraction of the line of suture. The two ends of the bowel are now accurately sewn together with catgut. The suture should be started on one side of the bowel and carried first across the mesenteric attachment to the opposite side and should take up all the coats. It finishes at the point where it began, and a peritoneal stitch is subsequently put over the first line of union in order to make all secure. The bowel is then dropped back into the abdominal cavity; the ragged hole in the abdominal wall, where the original hole was, is trimmed up and sewn together in layers. It is advisable to provide drainage either by means of a small tube or, better, by a piece of rubber tissue an inch wide passed well down to the back of the abdomen on the outer side of the colon and drawn out through the lower end of the incision. This drain can be shortened on the second day, so that it only passes through the thickness of the abdominal wall. Drainage is necessary because *B. coli* infection in the neighbourhood of the anastomosis is very difficult to avoid with certainty, and if drainage has not been provided may cause very serious trouble. The colon bacillus is always present in large numbers in the sigmoid, whereas the small intestine contains few infective organisms; consequently drainage is not necessary when joining up the small bowel, but always advisable when dealing with the large bowel.

After this operation the bowels should be opened on the second day, either with a small enema or a dose of salts, and be kept acting daily. There is no advantage in locking up the bowels for a long time, and the dangers of subsequent trouble are much greater if the patient is once allowed to become constipated.

Hyde Park place, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON THE USE OF "BIPP" FOLLOWING THE OPERATION OF BONE-GRAFTING.

BY H. STEWART BRANDER, M.D. ABERD.,
CAPTAIN, R.A.M.C.

Albee's admirable and fascinating book on bone-grafting will undoubtedly be of great service to surgeons at the present time. The technique of the operation of bone-grafting rendered necessary by the character of wounds caused by modern projectiles requires careful consideration owing to the fact that in these wounds cicatricial tissue is often extensive and the blood-supply consequently poor. Seeing that one must undermine the scar tissue in order to expose the ends of the bone to be grafted, and at the same time avoid the well-known risk of re-lighting infection in a wound which has been healed for months, I venture, in order that it may possibly be of help to some other surgeons, to record my experience with the use of "Bipp" following a bone-grafting operation. This I do because, in my opinion, the strictest aseptic precautions *alone*, are not always sufficient. The following is a history of the case:—

Corporal, R.A.M.C., aged 26 years, wounded by shrapnel at the Lancashire landing, Gallipolli, on July 11th, 1915. Transferred to a military hospital in this country on July 27th, 1915. Patient had a compound fracture of left radius. Skiagram showed radius fractured in two places—viz., about junction of middle and upper thirds and at

junction of lower and middle thirds. From the history of the case it is evident that there was much purulent discharge from the wound due to necrosed bone. The sequestrum was removed on Oct. 13th, 1915, and the wound healed about eight weeks afterwards. Patient was discharged from the Army on June 8th, 1916, as medically unfit. As a Chelsea pensioner he applied for treatment at the War Hospital, Keighley, and was admitted under my care on Nov. 13th, 1916. On admission to this hospital there was a healed scar 4 in. by 2½ in. on the externo-anterior aspect of the left forearm. The scar was very adherent to underlying structures. There was marked wrist-drop and apparently considerable loss of muscular tissue. The proximal and distal ends of the radial fracture could be readily felt at about a distance of 2 inches from each other. This was also well seen in skiagram.

Employing strict aseptic precautions, I operated on Nov. 26th, 1916. I took the graft from the tibia and followed Albee's technique throughout, except that a Hey's saw was used instead of the motor-driven circular-saw used by him. A long, curved incision was made on the front of the forearm well away from the scar. This was completely undermined and found to be adherent to the fractured ends of the radius, most of the muscular tissue in the proximity of the fracture having been destroyed either at the time patient was wounded or had subsequently sloughed. On completion of the operation the forearm was put up on a splint midway between pronation and supination. At the end of a week I dressed the wound for the first time and found that, although the skin incision had healed by first intention, part of the original scar tissue about the size of a five-shilling piece had sloughed, exposing about an inch of the graft. My first impression was that the operation was doomed to failure. Employing very strict technique according to Rutherford Morison's method, however, I "Bipped" the sloughing surface and renewed the "Bipp" every ten days, with the result that the skin wound is now (nine weeks after operation) healed and the union of the graft to radius strong. Skiagram shows the graft in excellent position.

Having had excellent results with "Bipp" in compound comminuted fractures, hernia cerebri, &c., its use after this bone-grafting operation suggested itself to me. In this connexion I wish to take the opportunity of thanking Lieutenant-Colonel Sir Berkeley Moynihan for advising and encouraging me, on one of his official visits of inspection at this hospital, to persevere with "Bipp" in the treatment of troublesome comminuted fractures; also Colonel Robert Jones for the opportunity he gave me of seeing a bone-grafting operation at the Military Orthopædic Hospital, London.

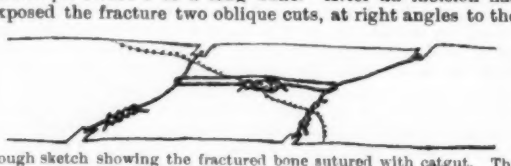
War Hospital, Keighley.

A NOTE ON THE SUTURING OF FRACTURED BONES BY ABSORBABLE LIGATURES.

BY KENELM H. DIGBY, M.B. LOND., F.R.C.S. ENG.,
HO TUNG PROFESSOR OF CLINICAL SURGERY AND PROFESSOR OF ANATOMY, UNIVERSITY OF HONG-KONG.

THIS preliminary note refers to a method first worked out upon isolated bones which were specially broken for the purpose, and upon the broken limbs of cadavera. No one should attempt the method in a living patient until he has tested it for himself and practised the technique on dead bones (human or other animal). The union is not very strong, but it is claimed that, in conjunction with careful splinting, it will maintain the fragments in accurate apposition in selected cases.

The method may be illustrated by taking the instance of an oblique fracture of a long bone. After an incision has exposed the fracture two oblique cuts, at right angles to the



Rough sketch showing the fractured bone sutured with catgut. The fracture is indicated by the dotted line.

fracture line, are made on the surface of each fragment. These are easily made on the more exposed fragments by means of a hack-saw and on the deeper or more buried fragments by a Gigli's wire-saw. Two stout ligatures of chromicised catgut, guaranteed to resist absorption for at least 30 days, are slipped into the grooves and knotted tightly. A third ligature uniting the two oblique ones is employed to tighten them still further (see diagram). It is absolutely essential that the ligatures be very tightly drawn. For this reason the ends of the catgut must be clamped in artery forceps so that a maximum force can be used in tying the knots. The wound is then closed and the limb placed in appropriate splints.

The method has the following advantages over the use of plates and screws: (1) The operation is much more speedy and requires no special instruments; (2) no foreign body is left in the tissues such as may provoke an effusion of lymph, favouring the occurrence of sepsis, or, at a later period may set up rarefying osteitis and a permanent weakness.

NOTE ON THE USE OF PHYLACOGEN IN PUERPERAL SEPSIS.

BY J. H. REYNOLDS, M.B., C.M. EDIN.

THE following two cases may prove of interest to those who are so unfortunate as to run up against puerperal sepsis, and are not near enough to a laboratory to have a vaccine prepared, or cannot wait for it.

CASE 1.—Patient, aged 26, married, a strong healthy primipara. On Dec. 12th, 1913, she had been in labour some hours before I was called, and was disappointed in her nurse, but was satisfied to have the services of a friend whom I found sitting on the bed clad in a greasy old fur motor-coat. It subsequently transpired that she was waiting to go into hospital with a view to operation, the history suggesting tubal mischief. I at once borrowed the nurse from another case near by, who was perfectly satisfactory, and the confinement took place in a normal manner. Only two examinations were made, one on first seeing the patient, and the other after the liquor amnii was expelled. On the third day the pulse became more frequent, on the next the temperature started to rise, and intra-uterine douches of peroxide were given twice daily. In spite of these and other measures, the disease ran a severe course, and on the thirteenth day a clot was detached from the placental site during douching and lodged in the lower lobe of the left lung. She collapsed at once, and began to cough violently, later on bringing up bright blood and mucus. That decided me to try mixed infection phylacogen (P. D. and Co.), and I was able to inject some that afternoon. The symptoms improved with astonishing rapidity, and on the fourth day of the injections the patient was not only out of danger, but well on the way to recovery.

CASE 2.—Patient, aged 30, married, primipara. Five days before confinement, which occurred recently, her nurse brought her to me and called my attention to a mammary abscess. This was opened at once and swabbed out with chloroform. It healed before the confinement, which started with vomiting and weak pains which died away. Several small abscesses were noted on the buttocks and were painted with tr. iodi. After 24 hours the patient had a frequent and weak pulse, so she was given an injection of morphia and atropine which induced a few hours sleep; food could then be taken. The pains set in more vigorously but were not very strong, and as soon as the os was sufficiently dilated the membranes were ruptured, allowing the escape of a large amount of liquor amnii. Pains became more vigorous and the head reached the vulva, but after an hour so little progress was made that the child was delivered by forceps; its weight was 10¾ lb. I had to wait three-quarters of an hour for the first pain after that, and expressed the placenta, as with the pain there was free hæmorrhage. It came away entire. From the first day the temperature was elevated and well within 24 hours the lochia were offensive. Much the same treatment was followed out as in the previous case, but on the seventh day, as the temperature reached 102° F., I decided to use phylacogen again, and started injection on the following morning. After two injections all untoward symptoms ceased and on the third day the patient's condition was that of a woman who had had a normal labour.

Of course, two swallows do not make a summer, but these are the only occasions on which I have needed phylacogen. The first case was losing ground till it was used, and the result was wonderful. In the second the patient, like the first, was a strong woman, but in this case I had the advantage of an excellent nurse. There is no doubt in my own mind that this was a case of primary inertia which passed into secondary. It is true that the symptoms were not nearly so severe, as she never had a rigor, although she felt very cold the day before I used the phylacogen. Still, the fact remains, as her chart shows, she made no real improvement till phylacogen was used, and I was nervous about her, because, rightly or wrongly, I looked upon the case as an infection before delivery—a condition I had never seen before.

Medical Societies.

HARVEIAN SOCIETY.

Diagnosis in Dyspepsia.

A MEETING of this society was held on March 1st, Dr. AMAND ROUTH being in the chair.

Dr. ROBERT HUTCHISON read a paper on Diagnosis in Dyspepsia. He defined dyspepsia as a disturbance of digestion caused by organic disease or functional disorder of the stomach. Owing to the widespread nervous connexions of the stomach and its close relations to other organs in the abdomen dyspepsia was prone to be simulated by disease elsewhere than in the stomach itself. Amongst such conditions, in which vomiting was chiefly the deceptive symptom, were pregnancy, uræmia, pulmonary tuberculosis, obstruction in the urinary passages (uro-kinetic dyspepsia) or colon, cerebral tumour, gastric crises of tabes, migraine, moveable kidney, nervous or hysterical vomiting, and, possibly, vicarious menstruation. Gastric pain might be simulated by gall-stones, angina pectoris and angina abdominalis, mucous colitis, and chronic appendicitis. Extra-abdominal causes had also to be thought of—e.g., pleurisy, spinal caries, myalgia, and herniæ. Finally, air-swallowing (eructatio nervosa) was often mistaken for the flatulence of dyspepsia. Having eliminated the possibility of simulation, one had next to determine whether the symptoms were due to organic disease in the stomach or to perversion of its functions. If the patient complain of *severe* pain, or if there be much wasting, or if vomiting be a prominent symptom, the presumption was in favour of organic disease and of the necessity for surgical treatment. The organic diseases which have to be differentiated are: (1) ulcer, which is characterised especially by pain coming on at a definite interval after food; (2) carcinoma, in which pain is more constant and wasting and loss of appetite are prominent features; (3) stenosis of the pylorus and hour-glass stomach, in both of which vomiting is pronounced; and (4) gastritis. The differential diagnosis of these by symptoms, physical signs, and the use of special methods such as test-meals and X rays was considered in some detail. Midway between the organic diseases and functional disorders of the stomach were two conditions which partook to some extent of the character of both. These were: (1) the painful dyspepsia of young women, which is variously known as gastralgia, acute ulcer, gastric erosions, hæmorrhagic gastralgia, and gastrostaxis; and (2) gastroptosis. The diagnostic features of these were described, and it was pointed out that they were not cases for surgical treatment. If simulation cases and cases of organic disease had been eliminated one might conclude that the case was one of functional dyspepsia. Further differentiation now depended upon the question of classification. Various classifications of functional dyspepsia had been suggested. One might adopt an etiological basis, dividing cases according to their supposed cause—e.g., (1) those due to physical causes, such as fatigue, unsuitable diet, defective chewing, and so on; (2) mental causes, such as over-work; and (3) moral causes, such as worry and depressing emotions. This classification, though unsatisfactory, was of some use in radical treatment. Or one might adopt a purely symptomatic division—e.g., into "flatulent," "acid," and other types. Such a basis, though often had recourse to, was apt to lead to unsatisfactory and rule-of-thumb therapeutics. The most scientific plan was to divide cases according to the nature of the disorder of function present. Now the physiological functions of the stomach are three: (1) secretory; (2) motor; (3) sensory; and any of these may theoretically be disordered in the direction either of excess or defect. Hence one got as secretory disorders hyperchlorhydria and achylia, as motor disorders atony and hypertony, and as (theoretical) sensory affections hyperæsthesia and anæsthesia. These disorders might also occur in various combinations with one another, or along with organic disease. The differential diagnosis of these functional affections was then considered in detail.

Reviews and Notices of Books.

A Practice of Gynæcology.

By HENRY JELLETT, M.D. Dub., F.R.C.P. Irel., Master, Rotunda Hospital, Dublin, &c. With 374 illustrations, many in colour, and 11 coloured plates. London: J. and A. Churchill. 1916. Pp. 618. Price 21*s.* net.

THE present volume represents the fourth edition of Dr. Jellett's "Short Practice of Gynæcology," which he has extended from a work written primarily for students and practitioners to one of a more advanced nature. The book has been considerably enlarged and altered in form and is a much more ambitious work than its predecessor. The text has been very largely rewritten and a large number of new illustrations added. Chapters on Radio-therapy in Gynæcology and on Vaccine Treatment in Gynæcology have been contributed respectively by Dr. Walter Stevenson and Dr. R. J. Rowlette. In view of the recent advances made in the use of X rays and radium in the treatment of various gynæcological affections the chapter on this subject is one of much interest. As Dr. Stevenson points out, the technique of the radio-therapy of deep structures has been developed to a large extent in the treatment of diseases of the uterus, and the results are such that there is a decided tendency to see if this treatment can replace the use of the knife in many gynæcological affections. He gives a clear and succinct account, free from technicalities, of the methods of using X rays, radium, and radium emanations in gynæcological cases. His description of the use of emanations is particularly interesting since this method is coming more and more into use. It has the great advantage of cheapness, emanations are supplied by an increasing number of institutions, and they can be collected in any shape or size of glass vessel suitable for the requirements of the case to be treated and without any risk of loss or permanent diminution of the value of the parent radium. The method of using emanation needles containing emanation glass capillaries, as devised by Professor Joly and the author, is described and strongly recommended; it certainly seems to have many advantages. The chapter on vaccines contributed by Dr. Rowlette contains a helpful account of this method of treatment in its relation to diseases of the pelvic organs.

The revision of the book and the choosing of new matter have been well done, and the whole forms a complete and good text-book which should be appreciated by students. In a further edition we think that the section dealing with "Atmocausis and Zestocausis" might well be omitted; these operations have never met with much favour, have been abandoned even by most of their former advocates, and if an action of this kind is desired it can be more safely and effectually obtained by the intra-uterine application of radium. The illustrations are good and a number of coloured plates have been included taken from Rudolf Jolly's "Atlas of Microscopic Diagnosis." It seems a pity that the author and publishers should have had to go abroad for these drawings.

Dr. Jellett has also written a simplified and shortened edition of the above book (*A Short Practice of Gynæcology for Medical Students*. 1917. Price 15*s*.). It is intended for the use of students by whom the larger book may be found too full. It has been shortened to 424 pages and contains only 316 illustrations and ten coloured plates, otherwise it is essentially the same book and requires no separate notice.

Trattato dei Neoplasmi Maligni.

Preceduto da uno Studio sulle Infezioni Chirurgiche in Generale. Di Professore D. B. RONCALI, Direttore del R. Istituto di Patologia speciale Chirurgica della R. Università di Padova. Volume Secondo. Con 133 figure nel testo e dieci tavole a colori. Torino: Unione Tipografico-Editrice Torinese. 1916. Pp. lxxix + 1040. L.34.

NEARLY six years ago we reviewed, at some length, the first volume of this work, which is now completed by the publication of the second volume. The story of malignant new growths is here treated on the same large scale to which attention was called in our review of Vol. I.; and the two volumes together form the most complete and exhaustive treatise in any language upon this very difficult subject.

This volume covers the fourth, fifth, and sixth parts of the whole work. These are: 4. Etiology of Malignant Growths. 5. Pathogenesis of Malignant Growths. 6. Therapy of Malignant Growths. Each of these subjects is dealt with very fully, and with careful criticism of all the work which has been done in relation to them from Hippocrates to 1914. Part 4 begins with an interesting account of the various views which were held as to the cause of cancer before the cell was discovered. The main part of this section is devoted to a very careful study of the various cellular theories which have been held, finishing with an account of the many parasitic theories which have been advanced since Nepveau's work in 1872.

The author, after obvious consideration, leans towards a parasitic cause; he thinks that there is a *quid virum* of parasitic nature and foreign to the organism, and he shows in great detail that as in physiology ontogenesis is a recapitulation of phylogenesis, so in pathology the genesis of cancer is a recapitulation of the genesis of inflammation. This section is the most difficult and also unsatisfactory on account of the disparity between the enormous amount of work which has been done on the etiology of cancer and the very small amount of exact knowledge we have concerning it. Part 5 deals with the predisposing causes of cancer and their modifications. Part 6 gives a very detailed account of the means at our disposal for alleviation of the symptoms, or possibly cure, of cancer. Under Therapy are included natural, prophylactic, palliative, symptomatic, and surgical therapy, and the account given is clear and quite free from prejudice. This section completes an enormous monograph, which is remarkable throughout for its accuracy of treatment, clearness and fairness, and which will be for many years valuable as the most complete résumé of our present theories and knowledge of cancer. Although the researches of the author have led him to believe in a parasitic theory of the origin of cancer, his statements and criticism of the work of others are fair and impartial, and he does not pretend to any finality in his views. He quotes the following from John Hunter in his preface: "Never ask me what I have said or what I have written; but if you will ask me what my present opinions are, I will tell you." He has done so.

A Text-book of Pathology.

By W. G. MACCALLUM, Professor of Pathology in the College of Physicians and Surgeons, Columbia University, New York. London and Philadelphia: W. B. Saunders Company. 1916. Pp. 1085. Price 35*s.* net.

Professor MacCallum spoils an otherwise excellent book by the method in which he deals with his subject. Regarding the lesions of the human body as the different results of various forms of disturbance and injury, he divides his book into a series of chapters dealing with these different types of injury and describes various diseases as illustrations of them. The result is that a good many of the chapters contain a curious medley of subjects, such, for instance, as in Chapter XIV.—sero-fibrinous and fibrino-purulent pericarditis, pleuritis, peritonitis, appendicitis, endocarditis, lobular pneumonia, puerperal infection, pyæmia, &c.—a mixture which in a text-book becomes confusing. For a series of lectures and as a method of illustrating lectures Professor MacCallum's plan has many advantages, but it is not suitable to a text-book. As the author particularly states that the book is not intended as a book of reference, he somewhat disarms criticism. His work is, however, uneven. The subject of uræmia, for example, is dismissed in a paragraph of eight lines, and we are told that we are still in the dark concerning it. In view of the much greater emphasis given to the subject of nephritis, so cursory a treatment of uræmia is a mistake. There are much less important lesions which are treated at greater length. The paratyphoid infections are another case in point, this chapter being quite inadequate.

We do not agree with Professor MacCallum's conception of inflammation as a purely vascular phenomenon. His views on this subject are altogether too narrow, and his rigid separation of the phenomena of repair from those of inflammation is not in practice tenable. Nor does it seem correct to classify compensatory hypertrophy of a paired organ, such as the kidney, as an example of repair. The chapter on obstructions of the alimentary canal (Chapter XX.) is clumsy, again because of the author's rigid adhesion to his method of presenting the subject. Such things as acute pancreatitis and gastric ulcer have to be dragged in as appendices in small print. The section on gastric ulcer is again inadequate, and we cannot agree that there is nothing specially characteristic about the several types of ulcer of the gastric wall.

There are 575 illustrations, many of them coloured, chiefly from drawings which are one and all excellent. We have seldom seen a better set of drawings in a text-book of pathology. They would be improved from the student's point of view if some indication of the extent of the magnification were added to the microscopical drawings. Fig. 16 is unfortunate as an illustration of intussusception associated with infarction of the intestine, for it illustrates multiple agonal or post-mortem intussusceptions in which infarction does not occur. Fig. 337 suffers from the wording of the legend which reads as though the collapse of the vertebræ causes the compression of the cord. The figure admirably illustrates the fact that it is the caseous material which causes the compression and not the bony displacement.

In the preface the author states that he has given references to literature which have been chosen so as to direct the student to readable and comprehensive papers which review the subject and give more complete references. The overwhelming preponderance of references to German literature in these lists makes them useless to the great majority of English students, at all events. Taken as a whole, however, the book is a good one, and can be recommended.

1. *Sanitation in War.*

By Major P. S LELEAN, C.B., R.A.M.C., Assistant Professor of Hygiene, Royal Army Medical College. Second edition. London: J. and A. Churchill. 1917. Pp. 336. Price 6*s.* net.

2. *Practical Sanitation.*

By GEORGE REID, M.D.Aberd., D.P.H. Eighteenth edition. London: Charles Griffin and Co. 1916. Pp. 267. Price 6*s.* net.

1. THE second edition of Major Lelean's handbook has followed the first with a speed which does not justify the inveterate modesty of his preface. The "nomadic life of the service" may have prevented the author from pigeonholing his information in an office, but not from marshalling in his brain in orderly sequence all the essential facts of the great new system of sanitation which is one of the outstanding features of the Army Medical Service. The sanitary officer has turned his drawbacks into benefits, and has shown that intelligence and ingenuity brought to bear on bully-beef tins and petrol cans can result in a system of hygiene on a grand scale not always obtained by the expensive apparatus employed by our local authorities at home. The book itself has been carefully revised for the second impression, and the most notable addition is Chapter VIII., on Some New Departures in Field Sanitation, which is a collection of admirable pen-and-ink drawings with explanatory notes. Sanitation in peace, when it comes, will need to take notice of this monograph.

2. Dr. George Reid has seen 18 editions of his handbook for sanitary inspectors in the quarter of the century which has elapsed since he first published it. No recommendation is therefore necessary, but we may note that the book shows signs of careful revision. Some minor blemishes to which attention was called three years ago have been rectified.

JOURNALS AND MAGAZINES.

The Annals of Tropical Medicine and Parasitology. Vol. X., No. 4.—The first article in this number of the *Annals* is a report on the X ray examination of dysentery and other cases, by Captain C. Thurstan Holland, R.A.M.C. (T.). The author in his investigations followed the method of Glasson, described in his paper on the localisation of dysenteric ulcers by X rays, including the giving of large doses of bismuth subnitrate for at least six days beforehand. The results, however, showed nothing which might not equally well have been seen on plates taken in similar circumstances from persons not suffering from dysentery. Captain Thurstan Holland observes that "in ulcer of the stomach bismuth does not adhere to the raw surface of the ulcer, and the X ray diagnosis of gastric or duodenal ulcer cannot be made from this point of view" and he adds, "the question immediately suggests itself, Why, when it is proved

beyond any question that bismuth does not adhere to the surface of gastric or duodenal ulcers, should it adhere to ulcers in the lower bowel?" An interesting joint contribution comes next, supplied by Mr. A. Malius Smith and Mr. J. R. Mathews, on the intestinal protozoa of non-dysenteric cases. These observers, while working at the Liverpool School of Tropical Medicine on the protozoa of patients suffering from dysentery, had opportunities of examining, for the presence of protozoa, 250 patients who had entered hospital with illnesses other than dysentery. Of these 75, or 30 per cent., had protozoal infections; 20 had *Entamœba histolytica*, either alone or along with one or more other infections; 48 had *E coli;* 20 *Giardia (Lamblia) intestinalis;* 5 *Chilomastix (Tetramitus) mesnili:* and 4 *Trichomonas hominis.* It is, the authors say, significant that 8 per cent. of a mixed population of non-dysenteric cases should be carriers of *E. histolytica*, and it is still more significant when it is considered that more than half of the 250 patients examined had never been out of strictly temperate regions and therefore presumably had not been exposed to the infection of amœbic dysentery, or only exposed in the very smallest degree. Of the 250 patients 123 had been in tropical or subtropical countries If only those are considered who had been in districts where *E. histolytica* was prevalent, the percentage of carriers of amœbic dysentery among them was 15 4. That this high percentage of positive cases should exist among those who had been exposed to infection and who were not suffering from dysentery is perhaps the most striking result of their investigations. Of the 20 patients who had *E. histolytica* in their stools, 3 had a history of dysentery, while 17 had no such history; these latter are what is termed "contact carriers." The authors believe that no such large number of contact carriers has previously been reported.—Mr. Henry F. Carter, lecturer on entomology in the Liverpool School of Tropical Medicine, contributes Some Remarks on the Spirochætes occurring in the Fæces of Dysenteric Patients. Of 554 patients admitted to hospital for dysentery or related disease, 313, or 56·5 per cent., showed spirochætes. He examined the stools of 100 other patients free from pathogenic amœbæ, 41 of whom were shown to be infected by spirochætes. From these results he concludes that spirochætal infections of the alimentary canal are almost, if not quite, as prevalent in non-dysenteric as in dysenteric cases.—A Preliminary Statement on the Treatment of Entamœba Infections by "Alcresta Ipecac." is contributed conjointly by Professor J. W. W. Stephens and Dr. Doris L. Mackinnon, protozoologist to the First Western General Hospital, Liverpool. "Alcresta ipecac.," it appears, is the trade name for an adsorption compound of ipecacuanha alkaloids with hydrated aluminium silicate; it is made up in tablets, each containing 10 grains of "Rio ipecac.," U.S P. It is claimed that alcresta ipecac. passes through the stomach unchanged and liberates alkaloids in the alkaline intestinal secretions, and that patients taking it suffer little, if at all, from the nausea and sickness that are so unpleasant a feature of some other forms of emetine treatment. The majority of the patients responded well to the treatment, and after being subjected to a pretty severe microscopical test were discharged from hospital as cured. The results on the whole compare favourably with those obtained by hypodermic injections of emetine hydrochloride.—The next paper is a first report on the protozoal findings in 910 cases of dysentery examined at the Liverpool School of Tropical Medicine from May to September, 1916, and is furnished jointly by four contributors—viz., Mr. H. F. Carter, Dr. Doris Mackinnon, Mr. J. R. Mathews, and Mr. Malins Smith. Of the 910 patients, 410, or 44 2 per cent., showed protozoal infections either alone or in mixed forms 94 had *E. histolytica*, and 169 had *Giardia intestinalis.* The other infections noted included *E coli, T. intestinalis*, and *C. mesnili.* The authors make a comparison of their results with those of previous investigators on the subject.—Dr. A. Breinl and Dr. H. Priestley, of the Australian Institute of Tropical Medicine, supply a Note on the "Arneth Count" in Healthy Aboriginal Children of Northern Australia, in continuation of previous investigations. The authors believe that the results of the "Arneth Counts" of Northern Australian native children living in a healthy district form a link in the proof that climatic changes in the tropics can be held responsible for the altered blood conditions of inhabitants of the tropics, and that it is not necessary to resort to endemic disease as an explanatory factor.—This number completes Vol. X. of the *Annals*, of which a table of contents is appended, with an index of authors and also a general index.

The *North American Review* for January contains a very topical article by Mr. A. Lawrence Lowell, entitled "The Year and the World," attached to which are notes on the German peace proposals, on the violations of international law which have taken place in the course of the war, and on the future financial and commercial position of the United States and our own country. Further articles on the "Position of America in the Trade of the World," on "Italy's Relation to the War," on the "Food Situation in Austria-Hungary," and on the significance behind the construction and activity of the present British Government form a valuable commentary on important phases of the existing international position. A brief article, also by Mr. Lowell, entitled "A League to Enforce Peace," concludes with the following warning to the American people:—

There is no use in seeking to minimise the obligations that our nation would undertake; but no nation, and especially no rich and powerful nation, can be wholly isolated in the world to-day. If it stands alone, it must run a risk of collision, of a struggle with a dangerous antagonist, perhaps more than one enemy, and perhaps alone. Our people must seriously consider whether the security against war is not worth the cost of the insurance, and whether we should not be wise, whether we have not some duty, to take part in the policing of the world. Such an opportunity as will be presented at the close of this war is not likely to come again.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

VITAMOGEN.

(WILLIAMS AND CO., 24, HOLBORN, LONDON, E.C.)

WE have already reported upon this preparation in our analytical columns, but we understand that it is now produced at a lower temperature with the object of securing an increased activity of the vitamines present. This is so far confirmed by our recent examination, since the preparation gave a very marked response for active enzymes. This shows that the temperature used in the course of preparation has been controlled at a point above which their activity is likely to suffer. Vitamogen yielded a small quantity of basic substance when extracted with 90 per cent. alcohol. The microscope showed the presence of pulse and cereal starches. The following analysis which we have made shows, apart from vitamines, that the preparation contains all classes of food substance: Moisture, 7·00 per cent.; mineral matter, 7·50 per cent. (equal to 2·50 per cent. phosphoric acid); protein, 24·96 per cent.; sugar, 20·83 per cent.; starch, 26 25 per cent.; fat, 1·51 per cent.; cellulose or fibre, 11 95 per cent. The preparation is largely soluble in cold water, the total soluble matters amounting to 62·80 per cent. The vitamines, of course, belong to a group of basic substances, but vitamogen also contains, as will be seen from the analysis, a rich proportion of phosphoric acid, derived partly from mineral salts and partly from organic phosphorus compounds.

(1) ALBULACTIN; (2) CYSTOPURIN.

(THE BRITISH PURCHASERS OF THE SANATOGEN COMPANY, CHENIES-STREET, LONDON, W.C.)

Both these products are stated now to be British-made. According to our examination, they are at all events, identical in composition with the products formerly reported upon in our columns—albulactin in THE LANCET of Jan. 7th, 1911, and cystopurin in THE LANCET of Oct. 11th 1913.

1. Albulactin is a white, decidedly alkaline powder which swells into a gummy mass when treated with water. It represents the albumin of milk, which occurs in a larger proportion in human milk than in cows' milk, and the suggestion is that the addition of albulactin in cows' milk suitably treated has decided advantages in infant feeding, and a certain amount of evidence is brought forward on this point. On acidification albulactin does not produce a curd,

but a milky, uniform, finely divided deposit. Our analysis gave the following results: moisture, 12·80 per cent.; mineral matter, 3·20 per cent.; protein, 84·00 per cent. The preparation gives a much more marked reaction for sulphur than does casein, which serves to distinguish to some extent milk albumin from milk protein. 2. Cystopurin is a simple combination of hexamethylenetetramine with sodium acetate, which has been used in bacterial affections of the urinary tract. Apart from its antiseptic action, it also acts as a diuretic, while the presence of sodium acetate is calculated to induce an alkaline condition. There are differences of opinion as to whether hexamine should be administered under conditions favouring an acid urine or, on the other hand, an alkaline one.

AMBRINE.

(THE ANGLO-FRENCH DRUG CO., LIMITED, GAMAGE BUILDING, HOLBORN, LONDON, E.C.)

WE have had an opportunity of examining ambrine, and it consists chiefly of paraffin wax, while it shows a small saponifiable value. The addition of oleum succini (oil of amber) is declared. The latter has some reputation as a local application in rheumatism. The main thing, however, in ambrine is the paraffin wax, which has been used considerably lately in the dressing of burns. This preparation is well adapted for the purpose owing to its purity and constant melting-point. It is supplied in the form of a cake of a light chocolate colour, which measures in length 6 inches and in width 4 inches, and about two-thirds of an inch thick. According to tests we have made, it has a melting-point of 122° F., which renders its application convenient. A full account of the use of ambrine in the Navy will be found in THE LANCET of Feb. 3rd, 1917, p. 201. Sir Arthur May, the Medical Director-General of the Navy, has arranged that every ship in the Navy, where burns are so frequent and serious a form of injury, shall be equipped with an outfit for their treatment by paraffin wax.

THE CONTROL OF VENEREAL DISEASES.

War, Venereal Disease, and Workers' Insurance in Germany.

Dr. Kaufmann,[1] President of the German Government Insurance Department (Reichsversicherungsamt), has collected the experiences of the past years, including the first period of the war, gained by the German empire in its dealings with venereal disease and insurance. The campaign against venereal disease in Germany has been so speeded up by the emergencies of the war that, brief as is the period with which this book deals, an immense amount of work done, and of schemes for the future after the war, come under consideration. Dr. Kaufmann gives some interesting figures. For the past 20 years the frequency of venereal disease in the German army has shown a steady decline, which continued even during the first year of the war. In this year the incidence of venereal disease was only 14·4 per 1000, as compared with 137 in 1895. It seems to have come as a surprise to the Germans that their armies in the fighting-line were less subject to venereal disease than the forces stationed within Germany's own frontiers. Indeed, the difference between the incidence of venereal disease in the armies at home and abroad seems to be remarkably great. Hence the necessity for that vigorous campaign against venereal disease throughout Germany inaugurated, apparently, by the temporary administrator of Belgium, von Bissing. Dr. Kaufmann describes the conduct of this campaign, the machinery and organisation of which are those of the Workers' Insurance. This organisation, which has done so much to suppress alcoholism and tuberculosis, has begun to establish dispensaries for the subjects of venereal disease, including not only the discharged soldier, but every insured person in Germany. The author touches on the delicate subject of specialist *versus* general practitioner in connexion with treatment, and emphasises the importance of expert treatment. He also discusses the problems associated with the quack, whose activities in tinkering with the disease and blackmailing its victims are notorious, notably in Southern Germany.

[1] Krieg, Geschlechtskrankheiten, und Arbeiterversicherung. (Published by F. Vahlen. Price M.2.)

Council Schemes.

Dr. Charles Templeman, medical officer of health of Dundee, has drawn up a scheme for that city, suggesting cöoperation with the neighbouring authorities. He proposes that the town council shall come to an arrangement with the laboratory at the infirmary or the University College, and use the out-patient department of the infirmary as the treatment centre. The infirmary directors were willing to provide eight beds at a weekly cost of 35*s* per bed.—At Leicester special medical officers, male and female, have been appointed for the treatment centre at the out-patient department of the Royal Infirmary, with attendance two days a week. A local branch of the National Council for Combating Venereal Diseases has been formed, of which Dr. C. K. Millard, medical officer of health of Leicester, is one of the honorary secretaries.

Notification of Venereal Diseases.

Writing on the campaign against venereal diseases in this country in the *Münch. med. Wochenschr.* of Jan. 11th Dr. A. Blaschko, who contributed a report to our Royal Commission on Venereal Diseases, states that in well-informed circles in Germany, as in England, compulsory notification is not considered an advisable measure at present. He mentions the drastic proposals of the Munich Medical Society,[2] only to condemn them, adding that they are in such flagrant contradiction with the experience of daily practice as to be certain to meet with opposition from those possessing practical knowledge.

Early Preventive Treatment.

Mr. Stanley R. Tattersall, a ship's medical officer, writes:—

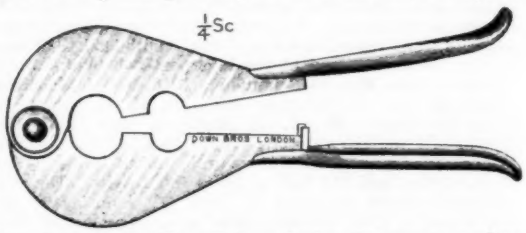
For some months past I have been issuing packages containing one tube of mercurial ointment and one of an organic silver preparation. The appreciation given to these packages has not been encouraging. The majority of men do not go ashore with the conscious intention of sexual indulgence, the desire being rather proportional to the amount of alcohol consumed. When sexual desire becomes urgent they have either forgotten about the package or are too lazy to use it. Even the exceptions do not show inclination to apply for the outfit, though this is issued gratuitously. The demand at Dr. Rentoul's price[3] of 5*s*. would be nil. Slot machines would, in the present state of public opinion, make their customers unpleasantly conspicuous. The best preventive is probably "information." Some time ago I lectured on venereal diseases to all men under my care. For seven months afterwards no case of the kind occurred on board.

[2] THE LANCET, 1916, ii., 1068. [3] THE LANCET, Feb. 3rd.

New Inventions.

AN AMPUTATION RETRACTOR.

I DESIRE to bring to the notice of surgeons, and particularly those who may be handicapped by lack of assistance in the matter of amputations, a simple little instrument (see illustration) which obviates the necessity of a second pair of hands during any amputation. It is intended to hold back the flaps while cutting through bone, and to those who, like myself,



have been repeatedly called on during this war to perform amputations single-handed and with despatch, I feel sure the instrument will appeal, and once used will prove its value and indeed justify its right to a place in every properly equipped theatre.

The instrument has been made for me by Messrs. Down Bros., St. Thomas's-street, S.E.

COLLINGWOOD FENWICK, M.D.,
late Surgeon-Major Armée Française.

THE LANCET.

LONDON: SATURDAY, MARCH 10, 1917.

The Mobilisation of the Medical Profession: the Position of Dentistry.

THE necessity of providing an adequate medical service for our ever-increasing armies still presses upon the professional committees whose duty it is to assist the War Office in this direction. It has been evident for some time that all the medical men who are prepared to take a temporary commission with alacrity, or who can accept such a commission without serious disregard of the pecuniary side of the matter, are already with the colours; the work of the Central Medical War Committee is growing very delicate, as the claims for exemption are seen more clearly to be based upon individual difficulty of circumstance or upon general shortage of medical men in the neighbourhood. As we state elsewhere, the Central Medical War Committee and the Committee of Reference of the English Royal Colleges have now selected their representatives for the Conference appointed at the instance of the Director-General of National Service, and it is generally expected in the medical profession that the deliberations which will ensue ought to settle promptly some of the difficulties which at present surround the mobilisation of the medical profession. Sir DONALD MACALISTER, who is to act as chairman of the Conference, will find himself in a position that will give full play to his genius for management.

It is possible that in the near future the same necessity for dealing economically with man power will arise with regard to the dental profession, as there is no question about the great importance of skilled dental aid in assisting to maintain the health of the community. We feel quite sure that the dental profession, if called upon, will freely and willingly adapt itself to any conditions which those in authority may consider necessary. The British Dental Association, with a view to the possibility of the mobilisation of dentists, has already taken steps to obtain all available information and statistics, which will be forthcoming when the call is made. The best manner in which to utilise the dentists will require careful consideration, for the number of qualified practitioners is strictly limited. Approximately there are 5000 dentists on the Register for a population of 40 millions. Of these about 2300 are of military age, and it is calculated that at the present time 1000 are serving the country either in the Royal Army Medical Corps, as dental surgeons to the Navy or Army, or as combatants. The number of dentists available for the civilian population is therefore some 4000, and if those of military age are called up, only 2700 will remain, a number totally inadequate for the needs of the community. Before the war the harmful effect of dental disease on the public health was appreciated by the medical and dental professions, but the condition of the teeth of the soldiers has drawn public attention to the question and the nation is beginning to realise the value of healthy teeth. The importance, then, of an adequate supply of dentists for the needs of the nation must be kept clearly in view by the Government authorities.

How best can the supply of qualified dental surgeons be utilised? In the first place, it would seem advisable to create a Central Dental Committee to work in coöperation with the Central Medical War Committee. The dentists should be enrolled in a similar manner to that which has been adopted with medical men. Those of military age, if not required for the dental needs of the Army, should not be taken as combatants, but should be used for dental service as the fittest occasions arise. For instance, the manufacture of munitions has created large communities in districts previously but sparsely populated, and in such cases arrangements might be made for a supply of qualified men. The depletion of our dental hospitals of adequate staffs must be avoided, for these institutions are a public necessity, and already work has been curtailed owing to the shortage of students. In the case of dental practitioners, with some years of general hospital experience, more use should be made of their services in connexion with the treatment of gunshot injuries of the jaw and the diagnosis of cases where dental disease is suspected as a factor in the general condition.

The Sphere and Future of Midwives.

AT a recent meeting of the Incorporated Midwives' Institute resolutions were passed upon matters affecting the employment of midwives of considerable interest to medical men. One of these resolutions contained an expression of strong opposition to the enforced notification of pregnancy as being likely to prevent the early engagement of a medical man or midwife to attend an expectant mother. Another resolution affirmed the belief that the midwife is the proper person to give antenatal care, because under the rules of the Central Midwives Board she is "responsible for the patient from the time of booking." The difficulty of providing effectively for antenatal care upon a large scale by employing exclusively for its administration the trained women who seek admission to the Midwives Roll at the hands of the Central Midwives Board was suggested by a third resolution, which contained a request that the Council of the Incorporated Midwives' Institute should endeavour "to discourage the depletion of the ranks of the midwifery profession, due to midwives taking up the less arduous and better paid work of health visitors." The same far-reaching resolution affirmed the desirability of educating public opinion as to the importance of adequate attendance at childbirth, "which can

only be attained by improving the status of the midwife and ensuring that she is sufficiently paid." To what source those responsible for this resolution were looking for an increase of the midwife's earnings was not revealed, and there may have been reason behind this reticence.

But if the introduction of infants into the world under conditions which will prevent wastage of life is to be attended with fewer elements of risk and less disappointing results, it is clear that the pecuniary side of the situation must be faced. At the present time the saving of infant lives has been rendered doubly valuable to the State by the occurrence of a devastating war, but the same cause has rendered the obtaining of money for public purposes more difficult than usual. Arrangements which might have been made whereby more adequate fees were received by medical men or midwives attending women in labour, and by those entrusted with their antenatal care, are now much more difficult to contemplate, and yet all public authorities would be well advised to consider them. The National Insurance Acts possess the necessary machinery through which the cost of the increased care of both mother and infant at the time of childbirth, and before and after the event, might be met, but the Commissioners cannot be expected to welcome any proposals for increased expenditure, and only the national nature of such a call upon their funds would be likely to move them. It would not be fair or reasonable, however, to subsidise the midwife, by the means suggested or by any other, to the exclusion of the medical practitioner. The fact that the working classes in many instances cannot pay adequate fees for attendance in childbirth affects medical men and midwives alike, and assistance in the one instance and not in the other would be unjust, though this is a view which the public will not necessarily appreciate. And here with regard to the education of public opinion a point suggests itself as worthy of consideration. The reports of the deliberations of the Central Midwives Board, which we publish from time to time, show that the Board has constantly to summon before it for disciplinary purposes women who have failed to obey its regulations in matters affecting the safety of their patients. The majority of these cases, it may be noted, fall under three headings: either the midwives have failed to recognise symptoms, or they have not advised that a medical man should be called in, or they have neglected prescribed precautions of cleanliness. In what proportion do these things apply to the two classes of midwives now practising—i.e., to those who were admitted to registration because they were practising before the Act came into force, or to those who have since been admitted after passing the tests of training and capacity which the Central Midwives Board imposes? In a recent pamphlet published by the Women's Industrial Council Miss J. F. MACKINTOSH states that during the past year of 102 penal cases in only 32 were the midwives certified, and of the 62 women removed from the Roll "far the larger proportion" were practising before the passage of the Midwives Act.

In a lecture recently delivered at the Royal Institute of Public Health on the rôle of the midwife and the protection of motherhood, the lecturer, Lady BARRETT, M.D., referred to the unsettled relationship, in their respective spheres of influence, of the midwife and the trained health worker; through a want of clear definition of their individual duties some misunderstanding has unfortunately arisen between these two indispensable classes of women. The midwife, owing to her long and undisputed jurisdiction over the destinies of the new-born baby, not unnaturally resents any suspected interference with her prerogatives. On the other hand, many of the highly trained and enthusiastic women who have been appointed as health visitors, and attached to the Public Health Service, may have gone beyond their legitimate provinces in repairing what they have considered the loss of golden opportunity on the part of the midwives. There can be no doubt that neither doctors nor midwives have sufficiently taken into account in the past the vast importance of prophylactic measures in the care of the pregnant woman. Lady BARRETT pointed out that the work of midwives and health visitors is for the most part distinct; it may overlap occasionally when the resulting difficulties must be overcome by tact and a little give-and-take on each side. The midwife, she said, should not resent the visits of a health visitor to the home during pregnancy any more than should a doctor, and the same tolerance should be extended to visits after the midwife has given up the case. A wise health visitor will not give advice to a mother regarding her personal health when the mother is already in the professional hands of a doctor and in receipt of those ministrations that according to the Act are expected from a qualified midwife. She can well occupy herself with matters of sanitation, housing conditions, and social economy. For the moment there appears to be some real difficulty in arranging the special niches which the health visitors and the midwives are to fill in those extremely useful institutions called antenatal clinics. In these there is undoubtedly work for both, but without whole-hearted cöoperation between all concerned, including the parents, they cannot fulfil their possibilities for good. The future of the calling of the midwife requires close attention; it is endangered not only by some factors which the midwives can themselves control, but by others where they require the sympathetic assistance of the public, the medical profession, and welfare workers.

ROYAL SOCIETY OF MEDICINE.—At the Section of Electro-Therapeutics on Friday, March 16th, at 8.30 P.M., an address will be given by Professor W. M. Bayliss, F.R.S., on "The Origin of the Electric Currents Led Off from the Human Body."

ARMENIAN RED CROSS AND REFUGEE FUND.—The second annual report of this fund shows a record of useful work. During the year 1916 £4146 was collected and £3000 spent in the relief of the Armenian sufferers from the war. In addition to the provision of food, clothing, and medical necessaries, an orphanage has been built at Alexandrapol, the expenses of which are 1000 roubles per month. The address of the honorary secretary is 35A, Elsham-road, Kensington, W., and the bankers are London and South-Western Bank, Holland Park branch.

Annotations.

"Ne quid nimis."

RECENT WORK ON CEREBRO-SPINAL FEVER.

IN the recently published fasciculus of the *Times* History of the War,[1] among other subjects dealt with is the epidemic of cerebro-spinal fever which early in 1915 gravely threatened the troops in training throughout the British Isles. The latest account states that in January, 1915, the Director-General of the Army Medical Services invited the Medical Research Committee to come to his assistance, and that immediately after this a plan of campaign was drawn up. This account is not quite accurate, for it ignores the valuable work that was done by Colonel W. H. Horrocks, C.B., A.M.S., Adviser on Sanitation to the Army Council, and by Surgeon-Colonel R. J. Reece, H.A.C., assistant medical officer to the Local Government Board, who from the time that cerebro-spinal fever was made compulsorily notifiable in September, 1912, had been watching the behaviour of the disease among the civil population. These two experts were asked by the Director-General to prepare a scheme for administering measures for the prevention and control of cerebro-spinal fever among the troops. For this purpose Surgeon-Colonel Reece was seconded by Sir Alfred Keogh from his regiment to devote his whole time to supervise the arrangements. A full account of this pioneer work was published in the *Journal of the Royal Army Medical Corps* in June, 1915. The scheme, which is still in operation, has proved very successful. The various Army Commands in England, Wales, Scotland, and Ireland were divided into suitable areas, in each of which a laboratory under a skilled bacteriologist was established, and, in addition, a special record-keeper was appointed in each area to make out lists of persons attacked and to obtain accurate information as to the sanitary environment, &c., in every case as it occurred. Both the district bacteriologists and the record-keepers made periodical reports to the War Office. At an early stage the newly established laboratories in England and Wales were inspected by Surgeon-Colonel Reece, who also at the same time instructed the district officers in their duties in connexion with cerebro-spinal fever. A part of the original scheme was the appointment of a skilled bacteriologist whose services would be available as a consultant, and to undertake research work, as the characters of the disease were not yet thoroughly known. The carrying out of this portion of the scheme was made possible by the Medical Research Committee agreeing to defray the cost of the consultant, who should give his whole time to the work. Dr. Mervyn Gordon, assistant pathologist to St. Bartholomew's Hospital, who had previously done admirable work in connexion with the bacteriology of cerebro-spinal fever for the Local Government Board, was appointed to the post, receiving the honorary rank of Major in the Royal Army Medical Corps. A central laboratory was established at the Royal Army Medical College, Millbank, and later, when the work had greatly increased, Dr. T. G. M. Hine was appointed assistant bacteriologist, with the honorary rank of Captain. The value of the services of these two expert bacteriologists has already been recognised by the Army Council, and Major Mervyn Gordon has been promoted to honorary Lieutenant-Colonel and Captain Hine to honorary Major. In elucidating the various scientific problems associated with cerebro-spinal fever the Medical Research Committee had the coöperation, and assistance also, of several expert bacteriologists in various parts of Great Britain. The details of the bacteriological operations of the central laboratory are described correctly in the excellent narrative given in the *Times* History of the War.

[1] Part 132, vol. xi., Feb. 27th, 1917.

THE DIET OF THE BRAIN-WORKER.

THE amount of fuel required in the economy of the man whose employment entails bodily exercise in greater or less degree has been fully discussed during the last few months, but the brain-worker still remains in doubt as to the minimum intake of food which he requires. The text-books have so far contented themselves with pointing out that brain-work, of whatever grade of intensity, is associated with a scarcely measurable increase in metabolism. Professor W. M. Bayliss, in a course of lectures delivered last autumn at University College, London, and now forming the basis of a useful little manual,[1] comes to the rescue of the brain-worker and suggests that there is another consideration besides the actual quantity of energy developed by mental activity which should be taken into account. The oxygen consumed by any organ is an index of the food required by that organ. Experimental results prove that, although the actual consumption of oxygen in the nerve centres is not great, it has to be supplied at a high pressure. This is shown by the fact that even momentary stoppage of the food-supply causes immediate unconsciousness, although the oxygen of the blood still remaining in the brain cannot have been exhausted. Professor Bayliss suggests the analogy of an electro-magnet wound with thin wire which does not need much current to actuate it, but which, owing to the high resistance of the wire, requires a high voltage to drive the current through. It is, at any rate, possible that efficient mental work may require food to be presented at high pressure, and that a brain-worker should take a diet of energy value equivalent to that of moderate muscular work. The question deserves further consideration.

[1] The Physiology of Food and Economy in Diet. London: Longmans, Green, and Co. Price 2s. net.

TWO SIGNS OF THYROID ABSCESS.

THYROID abscess is usually considered a very rare condition. However, in the *Boston Medical and Surgical Journal* of Jan. 18th Dr. F. H. Lahey has reported three cases which he has seen within a few months among a large number of thyroid cases coming under his observation. He has also pointed out two signs which do not appear to have previously received attention—viz., limitation of chin elevation and depression of the chin on the sternum when swallowing. In two of the cases there was a history of tonsillitis and in the other the abscess appeared during recovery from bronchopneumonia. One case was sent to the hospital as a cyst of the thyroid, and had practically every appearance of that condition, as well as the two signs mentioned. In all the cases there was a tender swelling across the neck and corresponding, for the most part, to the outline of the thyroid gland. In one case there was some redness of the skin over the swelling. In the other two the skin was normal. There was fluctuation in all the cases,

although it was not easy to appreciate, as pus here is overlain by two sets of muscles. Dr. Lahey regards his two new signs as important in cases suspected of thyroid abscess. They are brought about by the action of the sterno-hyoid, sterno-thyroid, and omo-hyoid muscles on the abscess beneath them. The pain would result from tightening of these muscles. Tightening in swallowing would be prevented by depression of the chin upon the sternum. Elevation of the chin would stretch these muscles, causing pressure on the abscess and pain. Depression of the chin upon the chest is the natural position then for the patients to assume in swallowing. The treatment is simple—incision and drainage. It is important, however, to dissect carefully down to the gland, under local anæsthesia, and to cut the fibres of the sterno-hyoid transversely for a short distance on each side of the median line, as the longitudinal tension of the sterno-hyoid and sterno thyroid produces a tendency for any other incision to come together, thus interfering with drainage. On establishing drainage in these three cases recovery was rapid and uneventful.

THE TUBERCULOSIS PROBLEM.

IN his recent address at the Royal Institute of Public Health Dr. T. D. Lister dealt with the tuberculosis problem as it has been altered by conditions of war. It was desirable, he said, owing to the reduction in funds now available for what are called "complete schemes," to begin by stock-taking. He agreed with Dr. Maxwell Williamson, medical officer of health of Edinburgh, who recently stated that the whole method of tuberculosis treatment should be reversed, and the money at present spent on sanatoriums should be devoted to re-housing. As a result of his study of industrial tuberculosis, Dr. Lister had come to the conclusion, already expressed in our columns,[1] that the present campaign is wrongly based. The real aim should be to carry the lessons of the sanatorium into the workshop and the home. He condemned the policy laid down by the Departmental Committee as one of academic perfection, foredoomed to failure. Tuberculosis officers can be much better employed in visiting doctors than in visiting patients. The criticism and supplanting of the general practitioner that are now going on in this and other movements are a matter for regret. Dr. Lister spoke strongly, adding that one futility was being followed by another, and that the money available was being frittered away in collecting statistics for reports, instead of used to prevent the economic loss from consumption. This, he said, was the real national problem of the disease, and was known to be due to environment, the bacillus being a comparatively harmless pest to the majority of town-dwellers, who were becoming immunised. Sanarelli's views of the history of the disease in relation to industrial urbanisation were brought under review, and Dr. Lister said that all we were doing at present was to watch national immunisation overtake national infection in urbanised populations. He would place the treatment of tuberculosis entirely in the hands of the general practitioner, who should be encouraged and helped in urban areas to join in forming the staffs of properly equipped out-patient institutions for all classes of disease as well as tuberculosis.[2] But he held, of course, that the prevention of tuberculosis was a matter for central administrative measures by the Local Government Board. In any area, he said, action should be taken if the deaths or notifications exceeded a figure to be called "the administrative index." This index would be a high multiple of the average incidence of mortality or of notifiable tuberculosis, a term requiring precise definition. By stating the administrative index high enough, only a few incursions of central authority would be necessary at first to destroy some of the worst hotbeds of the disease. Dr. Lister's suggestion is in effect an adaptation to chronic infection of the principles already adopted in the case, say, of a serious outbreak of typhoid or scarlet fever. It would, of course, take as many years to show its effects in tuberculosis as such methods take weeks in acute infections. But many other strongholds of disease would be affected by thus dealing with tuberculosis, the test disease of urban conditions, and both the factors of intensity of infection and of bad environment would equally come under consideration when the sole guide was an administrative index.

[1] THE LANCET, 1910, ii., 1122. [2] THE LANCET, 1912, ii., 1612.

THE SUMMER TIME ACT.

THE Committee appointed by the Home Secretary to inquire into the social and economic results of the Summer Time Act of 1916 recommends the renewal of summer time for this year and in the future, the period suggested being from the second Sunday in April to the third Sunday in September. Most of the difficulties foreseen by the fearful in the application of the Act did not come to pass. The objection that hardship was involved for the very early riser on account of the reduction in his vitality in the early morning hours was submitted to the Health of Munition Workers Committee. The reply was that:—

> The temperature of the human body is not constant, but is known to exhibit a distinct cycle during the 24 hours. A modification in the hours of work and rest leads to a corresponding modification in the hours of highest and lowest temperature. Thus, a party of Arctic explorers found that a complete reversal of their hours was followed within a few hours by a similar reversal of their temperature curves.

The alleged curtailment of the hours of sleep for children has apparently been substantiated in certain districts, but the Committee concludes that on the whole the children benefited by summer time. The proposed earlier return to normal time in the autumn is a concession to the weaving sheds of Lancashire, in which the artificial light may raise the temperature unpleasantly in the earlier mornings of the second half of September.

INSANITY AND THE WAR.

THE annual report of the Royal Edinburgh Mental Hospital for the year 1916 contains some interesting remarks by the physician-superintendent, Dr. George M. Robertson, on the exceptional circumstances produced by the war and their bearing on mental institutions. For 1915 and 1916 the admissions attributable to alcohol were 7 per cent. and 7·7 per cent. respectively; the average annual percentage for the preceding seven years was 12·6 per cent. There can be no doubt, therefore, that alcoholic insanity has been decidedly less since the war began, and there is no statistical evidence in Dr. Robertson's hands that alcoholism as a cause of insanity has increased among women. It is true, of course, that increase of occasional drunkenness and of transient forms of mental disturbance of alcoholic origin may have occurred apart from the cases that come under the purview of the

asylum superintendent. Speaking generally, there are no signs of increase of insanity last year among the civil population. A decided fall in the number of females admitted under Dr. Robertson's care suggests that the effect of war work has been, so far, on the whole beneficial and less injurious than the semi-employed and shut-in lives that many women formerly led. Bereavement as an alleged cause of insanity has not proved itself in any way potent, probably because the blow is softened by psychological factors that can readily be imagined. A certain type of mind, however, is prone to seek consolation for its sorrows in the domain of so-called spiritualism, and Dr. Robertson sounds a wise note of warning in this connexion. He does not consider that those who are unversed in normal, and particularly in morbid, psychology are qualified investigators, and, least of all, that those who are wishing and longing for and unconsciously expecting certain manifestations from friends they may have lost make reliable observers. Accordingly, he regards the publication of "Raymond" at this time as much to be deplored. Such words from an eminent psychiatrist will, it is to be hoped, carry proportionate weight. Amateur and biassed inquirers into the subject are, as a rule, quite unaware that "if they would meet those who are hearing messages from spirits every hour of the day, who are seeing forms, angelic and human, surrounding them that are invisible to ordinary persons, and who are receiving other manifestations of an equally 'occult' nature, they only require to go to a mental hospital to find them. It is true that the modern physician, by a long study of these phenomena, has come to regard them as symptoms of disease, and has renounced the doctrine of possession by spirits, though it had the double merit of simplicity and of antiquity to support it. If honest mediums do exist who hear inaudible messages, or feel communications without words, or see forms invisible to others, the mental physician accustomed to symptoms is inclined to regard their 'gifts' as being, if not morbid, at least closely related to the morbid, with no element of anything 'occult' about them."

Another annual report where the question of the war in its relation to insanity receives critical consideration is that of the Crichton Royal Institution at Dumfries. The physician-superintendent, Dr. C. C. Easterbrook, has analysed the histories of the 157 admissions of 1916, and in 19 (12 per cent.) a connexion between the two was apparent or traceable. Of these 19 patients two were women. In every one of the series the common factor of pre-existing nervous or mental instability was definitely determined to have been present. In other words, the influence of the war on these particular individuals has been to expose and accentuate their inherent weakness, whereas the normal individual is braced up and stimulated and his latent qualities of resistance are developed by the strain and stress of these times.

THE Lettsomian lectures of the Medical Society of London on "War Surgery of the Abdomen" will be delivered at 11, Chandos-street, Cavendish-square, London, W., on March 19th, 22nd, and 23rd, by Colonel Cuthbert Wallace, A.M.S. On April 2nd a discussion on "The Operative Treatment of Arterio-Venous Aneurysm," will be introduced by Colonel Charters Symonds, A.M.S., and Captain R. H. Jocelyn Swan. The time in each case is 8.30 P.M.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Lahore Medical College.

THE annual presentation of prizes to the students of the Lahore Medical College and Medical School was made recently by the Hon. Colonel Harold Hendley, Inspector-General of Civil Hospitals, Punjab. The report stated that the new buildings with their up-to-date theatres and class-rooms were now available and all the discomforts and difficulties of the past had come to an end. 234 and 304 students are now on the rolls of the college and school respectively as compared with 176 and 269 in 1915. The total of 538 students exceeded that of the preceding year by nearly a hundred. 103 students had been refused admission to the school owing to want of accommodation. The only remedy suggested for this hardship is the separation of the school from the college, for if the former were re-established in another city it could be so expanded as to admit all students who apply.

The Cultivation of Medicinal Plants in India.

At the last sitting of the Calcutta session of the Industries Commission Major A. T. Gage, I.M.S., Director of the Botanical Survey of India, gave expert evidence concerning the working of his department and the correlation of its activities with those of the economic botanists in the Forest and Agricultural Departments. He said that given the necessary staff and equipment it should be quite feasible to undertake the systematic cultivation in India of any or all of the species of drug-yielding plants and also the improvement of their quality. So far as he was aware no organised attempt had yet been made to discover what drugs were in demand in India and could be cultivated with advantage. At present there were 3000 acres actually under cinchona plantation in Bengal, and he saw great possibilities for an organisation devoted to the proper development of medicinal plants in India.

Sub-Assistant Surgeons in Conference.

The eleventh annual conference of the All-India Sub-Assistant Surgeons' Association was recently held in Madras, and was attended by representatives from Bombay, Poona, Baroda, Ahmedabad, Indore, Gwalior, Agra, Meerut, Lucknow, Calcutta, and Burma, in addition to members from the Madras Presidency. Surgeon-General W. B Bannerman, C.S.I., was in the chair. The chairman in his presidential address said that during his long years of service in India he had learned to respect and esteem the sub-assistant surgeon as a man who had, in most cases, gained his present honourable position by hard work in adverse circumstances and who could be relied upon to help in time of need.

New Hospital for Rangoon.

At a recent meeting, presided over by the Lieutenant Governor, it was decided to take steps to collect funds for the erection of a new general hospital to be called the Lady Chelmsford Hospital.

Vaccination in the United Provinces.

The prejudice against vaccination is breaking down, a fact which is indicated in the report of the Sanitary Commissioner for the United Provinces. The percentage of successful vaccinations in relation to the birth-rate shows a steady rise year after year, and last year reached nearly 72. A million and a half vaccinations were performed during that year, as against a million and a quarter during 1909–10. Concurrently with the increase in the number of persons vaccinated the mortality from small-pox has declined in the United Provinces to 0·05 per 1000 of the population from 0·38 in the previous year, and 0·13 in the quinquennial average.

Overcrowding in Simla.

The question of the overcrowding of Simla forms the subject of some pointed remarks in the report of Colonel Hendley, officiating Sanitary Commissioner of the Punjab, which has just been published. Colonel Hendley considers that it may eventually be found necessary to limit the population of Simla by levying a heavy poll-tax and so making it difficult for persons not in employment to live there.

A Gardening Corps for the Mesopotamian Field Force.

In order to meet the inadequacy of the present supply of fresh fruit, vegetables, and garden produce for the use of the Mesopotamian Field Force the Madras War Fund has offered

to raise and equip a number of units for gardening purposes, a unit being estimated as being able to cultivate 15 acres. The General Officer Commanding in India has accepted the offer of four such units which, with any further units organised, will form the Madras Gardeners Corps and be placed under the command of a European superintendent.

MEDICINE AND THE LAW.

The Need for the Criminal Law Amendment Bill.

CASES which it should be possible to deal with more effectually when the Criminal Law Amendment Bill is passed are at the present time of frequent occurrence, Mr. Francis recently sentenced a girl, pronounced by the police to be a disseminator of contagion, and of the worst personal character, to six months' imprisonment in default of finding a surety for her good behaviour, and declared that it was the only course open to him. He passed on the same day a like sentence on another girl of the same class, and heard "an unusually large number" of cases of soliciting soldiers. On the same day Mr. Chapman had before him nine women charged with soliciting soldiers in one locality alone (Waterloo Bridge-road), as well as two more from that district one of whom had two charges of procuring made against her. Presumably all these women would have been dealt with under the new law in its original form. Of the danger there can be no doubt. Whatever views may be held as to compulsory examination in any circumstances, the existence of the emergency cannot be disputed.

Adoptive Public Health Measures.

The recently-issued report of the Local Government Board for Ireland contains instructive evidence of the limited amount of advantage to be derived from measures connected with the public health when they are made adoptive instead of compulsory. The notification of tuberculosis under the Tuberculosis Prevention (Ireland) Act, 1908, is stated to have made steady progress, and to extend to 79 sanitary districts. These, however, can only be described as containing "over a third" of the population of Ireland. Nevertheless, so far as the experiment has gone, it seems to be regarded as successful, some local bodies having passed resolutions in favour of its universal adoption. The Notification of Births Act, 1907, has now been made general by the Extension Act passed in 1915. Under the adoptive system Belfast county borough and Dublin county borough were the only two districts in Ireland in which the Act was put into operation. As it is observed in the report that infant mortality in urban districts in Ireland is considerable and "affords ample scope for a substantial reduction," the experiment now being tried upon a large scale should supply interesting results.

Criminal Lunatics and Broadmoor Asylum.

In the House of Commons recently Mr. T. M. Healy, K.C., asked the Home Secretary a series of questions regarding the detention of Irish criminal lunatics. The reply elicited was to the effect that in several instances men charged with criminal offences out of Great Britain and found by the court to be insane are confined in an asylum in England, including at least one who was tried in Ireland, and that the authority for the practice was the Criminal Lunatic Asylum Act, 1860. It was added that the matter was one of convenience and that Broadmoor was a regular prison for the purpose. The statute referred to by Sir George Cave in his answer to Mr. Healy is known as the Broadmoor Act, as well as by the title quoted above. It enables the Crown to appoint any asylum or suitable place in England to be an asylum for criminal lunatics, but Broadmoor is the only asylum which has been so appointed. Under Section 2 of this Act a Secretary of State may direct to be conveyed to, and kept in, such an asylum any person for whose safe custody during its pleasure the Crown is authorised to give order, or any person coming within the terms of that section. Under other Acts (14 and 15 Vict., C. 81; 47 and 48 Vict., C. 31) criminal lunatics in India who are European British subjects, and criminal lunatics in other British possessions where they cannot conveniently be confined or suitably treated are removable to England, and may be committed to Broadmoor.

THE SERVICES.

ARMY MEDICAL SERVICES.

TERRITORIAL FORCE.

Lieut.-Col. A. M. McIntosh to be temporary Colonel whilst holding the appointment of Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

L. C. Bruce (Captain, R.A.M.C., T.F.) to be temporary Major whilst employed at the Murthly War Hospital.

Capt. A. T. J. McCreery to be local Major whilst employed on embarkation duties.

A. de W. Snowden to be temporary honorary Major whilst serving with the British Red Cross Hospital, Netley.

To be temporary Captains: Temp. Lieuts. F. W. Lyle and R. C. L. Batchelor.

Temp. Hon. Major C. H. Miller, having ceased to be employed with the British Red Cross Hospital, Netley, relinquishes his commission.

Temp. Capt. F. G. Heard relinquishes his commission on account of ill health.

Temporary Lieutenants relinquishing their commissions: A. Neville, M. Jenkins.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: B. J. Daunt, W. Saunderson, H. J. Wright, D. Columbos, W. R. Dickinson, H. T. Lamb, C. C. Harrison, F. B. Jago.

To be Lieutenants: F. C. A. Frith, F. Portas, J. R. Harris, C. W. Armstrong, and W. G. Verdiquet (from University of London Contingent O.T.C.), M. W. H. Miles, M. Morrison.

TERRITORIAL FORCE.

Major G. G. Turner is restored to the establishment.

Capt. (temp. Major) T. B. Wolstenholme to be acting Lieutenant-Colonel whilst commanding a Casualty Clearing Station.

Capt. L. C. Bruce is seconded whilst holding a temporary commission in the Royal Army Medical Corps.

APPOINTMENTS IN THE INDIAN MEDICAL SERVICE.

It was recently announced that after the last open competitive examination for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the Service would be made by nomination by the Secretary of State. To assist him in making these appointments, which, as already announced, will be limited in number to the absolutely indispensable needs of the Service, Mr. Chamberlain has appointed a Selection Committee who will summon and interview such applicants as may appear to be *prima facie* suitable and make recommendations for appointment. Applications for appointment should be addressed to the Secretary of the Military Department India Office, Whitehall, S.W., and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, &c., in the Service can be obtained from the Secretary, Military Department.

URBAN VITAL STATISTICS.

(Week ended March 3rd, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18,000,000 persons, the annual rate of mortality was equal to 18·4, against 22·5 and 21·0 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 18·0, or 3·8 per 1000 less than that recorded in the previous week; in the remaining towns the rates ranged from 5·8 in Cambridge, 6·8 in Enfield, and 9·1 in Coventry, to 28·4 in Wigan, 29·6 in Bath, and 30·5 in Tynemouth. The principal epidemic diseases caused 330 deaths, which corresponded to an annual rate of 1·0 per 1000, and included 174 from measles, 53 from infantile diarrhœa, 47 from diphtheria, 43 from whooping-cough, 9 from scarlet fever, and 4 from enteric fever. The deaths from measles showed a further increase on the numbers in the five preceding weeks, and caused the highest annual rates of 4·2 in Wigan, 5·5 in Wimbledon, 5·8 in Ilford, and 6·5 in Warrington. The 829 cases of scarlet fever and the 1486 cases of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 16 and 18 in excess of the numbers at the end of the previous week. Of the 6120 deaths from all causes in the 96 towns, 243 resulted from violence. The causes of 57 of the total deaths were uncertified, of which 12 were registered in Birmingham, 8 in Liverpool, and 6 in London.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death rate was equal to 17·9, against 20·1 and 19·6 per 1000 in the two preceding weeks. The 362 deaths in Glasgow corresponded to an annual rate of 16·9, against 18·0 per 1000 in London, and included 18 from whooping-cough, 2 each from measles, diphtheria, and infantile diarrhœa, and 1 from scarlet fever. The 136 deaths in Edinburgh were equal to a rate of 21·4 per 1000, and included 5 each from measles and whooping-cough, and 1 each from enteric fever and diphtheria.

Irish Towns.—The 195 deaths registered in Dublin were equal to an annual rate of 25·5, or 1·3 per 1000 below that recorded in the previous week, and included 7 from measles, 3 from infantile diarrhœa, and 1 from enteric fever. The 169 deaths in Belfast corresponded to an annual rate of 22·4 per 1000, and included 3 each from measles and infantile diarrhœa, 2 each from whooping-cough and diphtheria, and 1 from enteric fever.

THE King has appointed Mr. Alfred Murray Gray and Lieutenant-Colonel G. B. Stanistreet, R.A.M.C., Esquires of the Order of the Hospital of St. John of Jerusalem in England.

Correspondence.

"Audi alteram partem."

TUBERCULOSIS AND THE WAR.

To the Editor of THE LANCET.

SIR,—Referring to the portion of your leading article of Feb. 17th dealing with the tuberculous soldier, it appears that possibly the best solution is *in medio tutissimus ibis*. The suggestions of both Dr. T. D. Acland and Dr. E. H. R. Harries can be reconciled by keeping the tuberculous soldier still undischarged from the Army, and allowing him a few days' furlough with his family, before ordering him into a sanatorium. Men are very human, and it hardly savours humanity to condemn a man to three months' residence in a sanatorium, in his own district, after, say, a year in France, without allowing him a reasonable chance of seeing his relatives. The time thus occupied could be made use of by requiring his attendance at the dispensary, so that his class and treatment could be carefully considered, on behalf of the Insurance Committee. Quite a considerable number will be found not to require sanatorium treatment (Class 1), but would do better with light work, if permitted. In many instances light work of military character would be very beneficial to prevent the development of the loafing habit, which is so dangerous to the mentality of the early tuberculous case. Suitable cases (Class 2) would then be *ordered* into the sanatorium, with the requisite authority Discipline, which is now our main difficulty, could thus be maintained. Then the tuberculosis officer could also be consulted on the question of pensions and allowances.

There are still left the hopeless cases of men who should have been under treatment long anterior, and who, ordinary humanity and British sense of justice demand, should be given decent conditions to terminate their lives, sacrificed in the interests of their country. The advanced cases are a distinct problem in finance. If they still remain in the Army the Insurance Committee would be reimbursed for their expenses, but not in a lump sum, as at present, for their passage may be protracted. The present procedure makes a contest between the economic and patriotic feelings of the Committee.

If these views are correct, all cases should be undischarged until their classification and treatment have been reported on by the tuberculosis officer, who is to have charge of the case, and pensions and allowances could then be apportioned by the Board, after being provided with his views, in accordance with the actual requirements of the case, the country's interest, and honour.

I am, Sir, yours faithfully,

H. A ELLIS,
Tuberculosis Medical Officer, County Borough of Middlesbrough.

March 2nd, 1917.

A PLEA FOR THE EARLIER POST-OPERATIVE RAYING OF BREAST CANCER.

To the Editor of THE LANCET.

SIR,—It is unnecessary for me to advocate the raying of all cases of carcinoma, at least of the breast. Most surgeons send their hospital patients to the X ray department so soon as the patient has regained strength sufficient to allow of her being moved. The system for which I now wish to put in a plea is merely the logical extension of this. "If it were done, when 'tis done, then 'twere well it were done quickly," and, I may add, the surgeon should make a point of seeing that it is done in all cases, and not leave this important, perhaps vital, matter to the discretion of an adviser who may, perhaps, have no knowledge on the subject.

The best time to administer the X ray is undoubtedly at the operation. Then we can give two or more full skin doses without having to take the skin into consideration, but when I have proposed this course to surgeons I am met with the objection that it adds to the length of an operation already too lengthy. Whether this objection is a valid one I cannot say. Patients did very well after the operation 20 years ago, when I should say the average time taken was double what it now is, and in any case it is perhaps more the loss of blood than the length of operation which is detrimental.

I have recently had occasion to witness one or two operations for breast cancer, and as far as I am capable of judging, the present technique is perfect. Not much more progress can be made in shortening the operation, but as bleeding causes most of the delay, any improvement must take place in the method of checking this. I was much struck some years ago at the rapidity with which bleeding was checked by the use of the De Keating Hart air-cooled high-frequency current, called by him fulguration. I saw this employed in desperate cases of malignant disease, not for the purpose primarily of checking bleeding but for its reputed effect in preventing recurrence. I had also the opportunity of inspecting some of the patients who had been operated on at various periods, and I was struck by the suppleness of the scars and by the small amount of distortion caused, in spite of the large amount of tissue destroyed by the disease and removed at the operation. I was told by the surgeon that the fulguration did not delay but actually seemed to help healing. I did not see it used on closed wounds, however, and it might turn out detrimental to them. Here, it seems to me, is the direction in which to look for a means to shorten the operation for breast cancer, and the time saved by these means could be utilised to give the parts a thorough raying before the wound is closed. With the Coolidge tube two or three doses could be given in 15 minutes. This preliminary raying could then be followed up by a series begun as soon as the stitches are out.

It is true that excellent results are obtained in many cases of breast cancer now by operation alone, but the radiographer sees also many failures. If we and the surgeons could join our forces together more efficiently we might see still better results, and in any case there is no excuse for not trying.—I am, Sir, yours faithfully,

J. J. GRACE, F.R.C.S. Eng.,
Chief Assistant, X Ray Department, St. Bartholomew's Hospital.

Welbeck-street, W., March 5th, 1917.

SPIROCHÆTAL JAUNDICE.

To the Editor of THE LANCET.

SIR,—I have seen several letters regarding the nomenclature suggested to be given to the "spirochætosis icterohæmorrhagica" which has appeared at the various fronts of the belligerents in Europe It appears to me that neither "spiroc. icterohæmorrhagica" nor "spirochætal jaundice" is quite appropriate. I would respectfully suggest that it be called "spirochætosis ictero-albuminurica," (1) because it has not yet been satisfactorily proved that the disease observed in Japan is the same as has been noticed in Europe. (2) or because "hæmorrhage" is very rarely found in European cases, whilst "albuminuria" is, in fact, always present.

It appears to me also, not appropriate the name "spirochætal jaundice," because in Egypt, Indo-China, and the Arabian coasts of the Red Sea is endemic a relapsing fever with jaundice. The nomenclature I suggest, "spiroch. ictero-albuminurica," indicates the etiology, the two principal and constant symptoms, and the seat of the disease (*causa sedesque morbi*). I am, Sir, yours faithfully,

Rome, Feb. 28th, 1917. Prof. UMBERTO GABBI.

ECONOMY IN FEEDING.

To the Editor of THE LANCET.

SIR,—The medical profession is in a position to serve the imperial cause in a modest way by offering advice to patients in the matter of foodstuffs. A rigorous diet is twice blessed—it is patriotic and it encourages health, especially among the idle rich. Among persons of moderate estate it constitutes no mean agency in the encouragement of household economy. Among households visited by me in my daily work I find many persons eager to adopt suggestions which I have made in this matter. I recommend two meatless days in the week and a meatless luncheon every day. A luncheon dietary which I am told is strictly followed in many houses consists of oatmeal porridge. followed by salads or fruit. Many patients have told me that even after war is over they intend to follow the dietary suggested, since never before

meatless days and meatless luncheons were instituted in their household economy had they experienced better health, and never before had housekeeping money gone as far. Moreover, even without any persuasion, servants follow the example of economical living set by the heads of households.

I am, Sir, yours faithfully,

Streatham Hill, S.W., March 2nd, 1917. H. WALTER VERDON.

*** Servants cannot follow examples, however good, without detailed instructions, and these in too many instances cannot be forthcoming. Moreover, emergency instructions are not much good; the training ought to have preceded the existing situation.—ED. L.

OFFICIAL MEDICINE AND THE THRIFTY SPIRIT.

To the Editor of THE LANCET.

SIR,—"*I thank Thee that I am not as other men are.*" These words sprang to my mind as I read the letter of your correspondent under the above title in your issue of Feb. 24th, and my heart burned within me to reply, but I felt sure that abler pens than mine would deal with the writer and forbore. Doubtless those who could answer have more precious work to do, or in the good old English way (the *mens conscia recti*) feel that it would be undignified, but as many who read the unworthy libel may believe that silence implies a knowledge of guilt, I will venture to say a word.

There are three charges:—

1. That the diners were guilty of unpatriotic waste. The answer is that the dinner was a simple, strictly "Devonport" meal, and that no one *could* have eaten more than he would have done at home. Is it more wasteful for 60 men to dine together than at 60 different tables? When communal meals are urged as a war economy it is rather silly to blame men for saving the expense of 60 separate dinners by agreeing to dine together. Those who shared it must have smiled bitterly at the charge of "feasting" and "overstepping the Controller's food allowance." I know I enjoyed my bread-and-cheese supper when I finished my day's work at midnight!

2. That the honour to Sir Alfred Keogh should be postponed till after the war. The King thinks otherwise, and that it is well to cheer and encourage his soldiers and sailors during the war, and if ever a man deserved the encouragement of the approval of the profession he honours—*now*—it is the Director-General, whose work has been hindered and injured by the ignorant criticism of jealous enemies in high places and—with shame be it said—by the attacks of members of the medical profession.

3 That the Royal Society of Medicine is not doing its "bit" for the war. This last only accuses the accuser, for it proves that he has grossly neglected his duty as a Fellow, and knows nothing of the war activities of his *confrères*. Immediately on the declaration of war those responsible for the work of the society set themselves to consider what it could do to help, and it would scarcely be an exaggeration to say that almost the whole work of the society since then has been directly or indirectly war work.

You, Sir, could not allow the space were I to attempt to catalogue its war activities, but I know that not once but many times has it received the warm thanks of the War Office for its help, and that scarcely a day passes that letters and messages are not received from Whitehall. Does the writer of the attack know that the War Office at its own expense keeps a special telephone attendant at 1, Wimpole-street, and has installed a private telephone wire exclusively for war work? He is ignorant, too, of the abstracts, translations, reports, and even books and instruments which are being sent to medical officers at the various fronts, and have brought to the society heaves of grateful letters. I know something of these things, because I consider it my duty to know what any society with which I am connected is doing for the war, and if possible to help it. If your correspondent knows of anything useful the society could do, and is not doing, I am authorised to say his suggestions will be cordially received.

I am, Sir, in proud humility,

March 7th, 1917. A PUBLICAN AND SINNER.

Obituary.

THE LATE PROFESSOR DÉJERINE.

FRENCH science has suffered a severe loss in the death of Professor Déjerine on Feb. 26th. Born at Geneva on August 3rd, 1849, of French parents, he studied medicine at the Paris hospitals, graduating in 1879 with a thesis on the nervous lesions of ascending paralysis. From this time on he devoted himself to the study of nervous diseases and their pathological anatomy. Chief of the clinic in 1879, he was elected to the hospital staff in 1882, becoming professor in 1901. Occupying in succession the chairs of history of medicine and clinical medicine, he found his proper place in the Salpétrière clinic, where, after Raymond, he succeeded Charcot. His work marked distinct progress in the knowledge of nerves and of the central nervous system. He had as frequent collaborator Mme. Déjerine, née Klumpke, the first woman to hold the title of interne at the hospitals, and especially in the remarkable work, "Anatomie du Système Nerveux." Of other important works, the "Traité des Maladies de la Moelle Epinière" was written in collaboration with Dr. Thomas, and a chapter, "Séméiologie du Système Nerveux" appeared in Bouchard's "Text-book of Systematic Pathology." Dr. Déjerine devised a method of examining the spinal cord in thin serial sections, which notably advanced the study of the pathological lesions of nervous tracts. His influence may be seen in the history of our knowledge of most nervous diseases—e.g., tabes, myelitis, radiculitis, aphasia. His great gifts were recognised during his life-time: in 1908 he was elected member of the Academy of Medicine, and he was an officer of the Légion d'Honneur.

LOUISA WOODCOCK, M.D., B.S. LOND., M.A. T.C.D.,

PHYSICIAN TO ENDELL-STREET MILITARY HOSPITAL, LONDON; PHYSICIAN TO OUT-PATIENTS, NEW HOSPITAL FOR WOMEN.

Dr. Lousia Woodcock, whose death on Feb. 17th in her fifty-second year we briefly recorded a fortnight ago, was educated at Cheltenham, where she studied classics, especially being attracted by the Greek language and literature. Passing on to Somerville College, Oxford, she took Honours Schools in morphology and zoology, spending a further year in the study of philosophy. In recognition of this work the University of Dublin awarded her the degree of M.A. From Oxford she entered the London (Royal Free Hospital) School of Medicine for Women, obtaining in 1900, after a six-years' course, the degree of M.B. Lond. with honours in medicine and the M.D. in medicine four years later. At this hospital she held the Mabel Webb Research Scholarship in Pathology. After qualification Miss Woodcock took the first resident appointment opened to women at the Royal Free Hospital, that of house physician, and was then in succession pathologist and demonstrator of clinical pathology. At the New Hospital for Women, Euston-road, after holding resident posts, she became pathologist, and in 1907 physician to out-patients, and held the senior post at the time of her death.

In addition to these appointments Dr. Woodcock had a varied clinical experience which broadened her outlook and gave her a conscious security in her many fields of work. She was part-time assistant medical officer to the London County Council, doing special work on children's eyesight; she was medical officer to the Epileptic Colony at Chalfont

St. Peter, medical inspector to Bedford College, to the London Collegiate School for Girls and the Camden School for Girls, as well as medical officer under the Elementary School Teachers Act. She was also at one time Research Scholar at the London School of Economics.

When the war came yet other duties were added to a life already full to overflowing. Dr. Woodcock became treasurer to the Women's Hospital Corps from its inception in August, 1914, and did much organising work for the corps while it was at work both in Paris and at Wimereux. When the military hospital was opened at Endell-street she became physician, welcoming the opportunity of increased usefulness, but giving out energy more than she could afford, until the willing spirit could no longer dominate a constitution far from vigorous.

Dr. Woodcock's busy life and multitudinous duties gave her little time for writing, and apart from a report on melano-sarcoma of the eyelid (1903) and the recital of a case of glanders in THE LANCET (1906), her most important piece of work was to write, in association with Mrs. Sidney Webb, a report on the domiciliary treatment of the sick poor under the English Poor-law.

In social life Dr. Woodcock was regarded by many as very reserved, and so no doubt she was. One who knew her well ascribes this reserve in part to the result of temperament, in part to force of habit, and for the reason that, possessing so full a nature and a mind so well stored, she loved to be "at home" within, considering, ordering, planning—here, indeed, was her workshop. "But," he adds, "though reserved, Dr. Woodcock was capable of the closest and deepest friendship, and in its cause of a devotion and self-sacrifice which knew no bounds."

"As a physician, Dr. Woodcock found her true vocation. She was of the type which Peter Mere Latham used to delineate in his clinical lectures to the students at St. Bartholomew's Hospital about the middle of the nineteenth century; her science was supplemented by her art, both were warmed by a large humanity. On such lines she went her quiet ways, herself the mistress of her life. Perhaps the justest measure of our success in life will be found in the extent to which, individually, we are missed in the sense of loss which we leave behind. Judged thus, Miss Woodcock's success has been, without doubt, a great achievement."

HORACE BENGE DOBELL, M.D. ST. AND., M.R.C.P.LOND.,

CONSULTING PHYSICIAN, ROYAL HOSPITAL FOR DISEASES OF THE CHEST, LONDON.

THE death of Dr. Horace Dobell, on Feb. 22nd, at Parkstone Heights, Dorset, in his ninetieth year, removes a figure well known in London medical circles in the "seventies."

Horace Benge Dobell was the son of John Dobell, of Cheltenham, and after apprenticeship to a local surgeon entered St. Bartholomew's Hospital in 1845. Qualifying M.R.C.S. he commenced practice with a success which justified his removal to Harley-street in 1864. His attention was chiefly directed to diseases of the chest and pulmonary tuberculosis, and he was elected in 1858 to the staff of the Royal Hospital for Diseases of the Chest in City-road, becoming consulting physician in 1874. Leaving London in 1882 on account of his wife's health he settled at Bournemouth, where he practised as a consulting physician, R. L. Stevenson being among his patients at this time. In 1892 he retired from practice and built himself a house at Parkstone, over-looking Poole Harbour, where he lived until his death.

Dobell was a member of the old school before specialism developed, and while he aspired to be master of one part of his art he kept up his general knowledge. Extremely observant, his accuracy in diagnosis and skill in treatment were exceptional. Patient, sympathetic, and rapid, though never in a hurry, his patients became closely attached to him, and on his last birthday he received many letters of congratulation from those whom he had previously attended and from the children and even grand-children of old patients. He had seen the birth of modern medicine—when he went to St. Bartholomew's Hospital Paget possessed the only microscope there—and it was his hobby to follow its growth. From 1869 to 1877 he published a series of reports on the progress of medicine in different parts of the world. Earlier in his career the Royal Society had published his researches on the "Action of Light on Animal Organisms," but the work was not continued. Long after retiring from practice he gave a sum of money to the Royal College of Physicians of London to endow lectures for research in bacteriology. His medical works include "Bacillary Consumption: its Nature and Treatment" (1889), "Diet and Regimen in Sickness and Health," of which the seventh edition appeared in 1882, and several others on various aspects of diseases of the chest. At the time of his death he was senior Member of the Royal College of Physicians of London and consulting physician to the Royal Albert Orphanage, Bagshot.

Dr. Dobell came of an artistic family. He was a fine artist himself, always illustrating his own books, and skilful in everything requiring manipulation, including music. In 1849 he married Elizabeth Mary Fordham, of Odsey House, Herts, who died in 1908. There were three daughters of the marriage, two of whom are living.

PETER HUGH MONTGOMERIE MACKELLAR, M.A., M.B., C.M. GLASG.

WE announce with much regret the death on Feb. 20th, at the age of 72, of Dr. P. H. Montgomerie Mackellar, who was for many years a member of THE LANCET staff.

Dr. Mackellar was the son of Edward Hugh MacKellar and of Johanna Parkins MacKellar, daughter of Duncan Montgomerie of Buchanan. He received his education at the Loretto School, Musselburgh, Scotland, and entered Glasgow University, where he was a gold medallist, qualifying M.B. in 1866 and taking his M.A. degree in the same year and the C.M. five years later. After obtaining his medical qualification he entered the service of a shipping company as surgeon and made several voyages to South America, collecting specimens of the flora and fauna of the countries he visited and presenting them to his old teachers on his return home. Before leaving Scotland he held an appointment at the City of Glasgow Fever Hospital, afterwards becoming medical officer to the Joint Counties Asylum at Abergavenny. Coming to London, he was appointed assistant medical officer to the District Small-pox Hospital at Stockwell, and later medical officer at the Fever Hospital of the Asylums Board there. In 1873, on the occasion of an epidemic of relapsing fever, Dr. Mackellar made his first contribution to our columns in a careful description of the cases admitted to the hospital.

Dr. Mackellar was a man of marked originality of mind, which expressed itself in a singular absence of convention combined with an extreme tenacity of purpose. His schooling did not begin until he was 10 years of age, although taught to read at home, and he attributed his success at school and college to this mental freedom of his early years. At college he came specially under Kelvin's influence in natural philosophy, Lister's in medicine, and their influences were ruling factors in his life. While never neglecting an opportunity of adding to his medical knowledge, he found time for many recreative studies, which contributed to make him a broad scholar. He possessed a sound knowledge both of chemistry and mathematics, while engineering, wood turning, and wood engraving also occupied some of his attention. He was a proficient Latinist, could read French, German, and Italian fluently, and could speak the first tongue idiomatically.

His body was interred at Fulham New Cemetery on Feb. 27th.

THE LATE MR. ROBERT BRUCE.

Robert Bruce, M.R.C.S. Eng., L.S.A., D.P.H. Camb., who died in London on Feb. 3rd at the age of 63, was educated at the City of London School and St. Bartholomew's Hospital, qualifying in 1875 as L.S.A., and becoming in the following year a Member of the Royal College of Surgeons of England. He later obtained the Public Health diploma of Cambridge. After holding a resident appointment at the Borough Hospital, Birkenhead, he came to London, where he succeeded his father in practice at Old-street, St. Luke's, moving later to Finsbury. At this time he was a district surgeon to the City of London Lying-in Hospital. In 1890, on account of his wife's health, he went to Milford, where for 26 years he was untiring in the work of his profession and in promoting in other ways the well-being of his adopted home. The Milford Cottage Hospital owes its origin to his initiative. Outside his private practice Mr. Bruce was district medical officer and public vaccinator for the Lymington Union, Admiralty surgeon and agent, and surgeon in charge of the troops at Hurst Castle. He was a justice of the peace for the county of Southampton.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Walker, Surg.-Prob. G. P., R.N.V.R.

Died.

Capt. G. S. Husband, D.S.O., I.M.S., received his medical education at Edinburgh and qualified in 1904. He entered the Service in 1907, and his D.S.O. was awarded early in June last year.

Slightly Wounded.

Surg. F. G. E. Hill, R.N.

OBITUARY OF THE WAR.

JAMES FROUDE FLASHMAN, M.D. SYDNEY,

LIEUTENANT-COLONEL, AUSTRALIAN ARMY MEDICAL CORPS.

Lieutenant-Colonel J. F. Flashman, who recently died of pneumonia in France after a few days' illness, was a graduate of the University of Sydney, qualifying M.B. in 1894 and M.D. in 1897, and remaining there in practice at 183, Macquarie-street. He came over with the Australian troops, and from November, 1915, until January, 1917, was attached to the 3rd London General Hospital at Wandsworth, where large numbers of the troops are treated. In January he wished to be nearer the front line, but soon succumbed to the inclement weather prevailing there.

Lieutenant-Colonel H. E. Bruce-Porter, to whose account of Colonel Flashman in the *Gazette of the 3rd London General Hospital* we are indebted for the personal details, speaks of him as a man who threw himself heart and soul into the life and work of the hospital. "During the time he was here he endeared himself to everyone, both staff and patients, with whom he came in contact, and his cheery smile was good to see." We join with Colonel Bruce-Porter in heartfelt sympathy to Colonel Flashman's widow and children.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Able Seaman B. G. Richardson, Royal Naval Division, youngest son of Dr. C. Richardson, of Leeds.

Capt. N. West, M.C., Royal Berkshire Regiment, second son of Capt. C. J. West, R.A.M.C., of Newbury, Berks.

THE HONOURS LIST.

The following awards to medical officers are announced :—

Distinguished Service Order.

Temp. Capt. Charles Owen Donovan, R.A.M.C., attached North Lancashire Regiment.

For conspicuous gallantry and devotion to duty. He displayed courage of a very high order over a period of 48 hours in attending to a large number of wounded of his own and other units in a shallow muddy trench, which was continually subjected to heavy fire. On another occasion he dressed several wounded officers in the open. He was severely wounded.

Military Cross.

Temp. Capt. George Noel Braham, R.A.M.C.

For conspicuous gallantry and devotion to duty. He with four others worked continuously under intense fire, and succeeded in rescuing several wounded men from the advanced dressing station, which was untenable. He set a fine example of courage and determination throughout.

Temp. Capt. John Crawford, R.A.M.C.

For conspicuous gallantry and devotion to duty. He took a party of stretcher-bearers to the position and proceeded to attend to the wounded under heavy fire. He set a fine example of courage and coolness throughout.

Temp. Capt. John Ferguson, R.A.M.C.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in tending to the wounded under the most intense hostile fire. Later, although himself wounded, he remained at his post until all the wounded men had been dressed.

Capt. Alaister Fraser Lee, R.A.M.C.

For conspicuous gallantry and devotion to duty in attending to a very large number of wounded under continuous heavy shell fire. He was thrown down and wounded by the explosion of a shell, but continued to perform his duties in the most gallant manner.

Temp. Capt. William Douglas Reid, R.A.M.C., attached Manchester Regiment.

For conspicuous gallantry and devotion to duty. He displayed great courage and skill in tending the wounded under heavy fire. Later, although himself wounded, he continued to dress the wounded of all units. He has previously done fine work.

Capt. David Christopher Vey, R.A.M.C., Spec. Res., attached East Lancashire Regiment.

For conspicuous gallantry and devotion to duty. He attended to the wounded in an open trench under very heavy fire. Later, he assisted to bring in many wounded men from the advanced trenches. He set a splendid example of courage and determination throughout.

Capt. Cyril James Berkeley Way, R.A.M.C., Spec. Res.

For conspicuous gallantry and devotion to duty. He repeatedly led his bearers through intense enemy barrages. He personally rescued several wounded men from shell-holes under machine-gun fire.

Capt. Charles Kingsley Parkinson, Aust. A.M.C.

For conspicuous gallantry and devotion to duty. He brought several wounded stretcher-bearers into the dressing-station under very heavy fire, thereby undoubtedly saving many lives. He set a splendid example of courage and determination throughout.

Foreign Decorations.

The following decorations conferred upon British medical officers are announced :—

By the King of Italy.

Officer of the Order of the Crown of Italy.—Fleet-Surg. R. Hughes, R.N.; Staff-Surg. T. W. Myles, R.N.

By the President of the French Republic.

Croix de Guerre with Palm.—Capt. A. G. Whitehorne-Cole, R.A.M.C.

MENTIONED IN DESPATCHES.

The following names are to be added to those mentioned in the despatch received from Field-Marshal Sir Douglas Haig, G.C.B., reported in THE LANCET of Jan. 13th, p. 82 :—

Col. R. E. Roth, D.S.O., V.D., Australian A.M.C.; Maj. H. L. St. V. Welch, Australian A.M.C.

THE CENTRAL MEDICAL WAR COMMITTEE.

During the week the Executive Subcommittee have been considering the financial aspects of the mobilisation scheme for doctors, as well as the matters to be discussed at the forthcoming Conference arranged at the instance of the Director-General of National Service under the chairmanship of Sir Donald MacAlister. The Central Medical War Committee will be represented at the Conference by Mr. T. Jenner Verrall, the chairman of the Committee; Mr. Bishop Harman and Dr. Alfred Cox, the honorary secretaries of the Committee; Dr. C. Buttar, the chairman of the Executive Subcommittee; Mr. E. B. Turner; and Dr. B. A. Richmond, secretary of the London Panel Committee. The Committee of Reference of the English Royal Colleges will be represented by Dr. Frederick Taylor, and Sir Rickman Godlee, with Mr. F. G. Hallett, the honorary secretary of that Committee. Mr. Neville Chamberlain has accorded an interview already to Dr. Taylor, Mr. Verrall, Dr. Buttar, and Mr. Bishop Harman, at which the work of the Central Medical War Committee was fully explained, and there is no doubt that this clearing of the ground will be of use in the forthcoming Conference. The Scottish Medical Service Emergency Committee will be represented at the Conference by Dr. John Adams, vice-chairman of the Scottish Committee of the British Medical Association; Dr. John C. McVail, deputy chairman of the National Health Insurance Commission of Scotland; and Dr. Norman Walker, the convener of the Emergency Committee. Sir Donald MacAlister should therefore be presiding over a very business-like as well as representative group.

THE WAR CRIPPLE: THE MINISTRY OF PENSIONS SCHEME.

The important statement made by Mr. Barnes, Minister of Pensions, last Tuesday in the House of Commons clears up the intentions of the Government towards the soldier crippled in the war.[1] Mr. Barnes described with candour the care and welfare of disabled men as the most backward part of the work of the Ministry, and announced that he had at last arrived at an agreement with the War Office on the crucial question: When should the wounded or invalided man be discharged from the military hospital? His own original view that the man should be retained by the War Office until he was wholly cured or pronounced to be incurable had been modified by his experience of the effect of hospital life and discipline on the man's nervous temperament, and the agreement was now as follows:—

The War Office undertook to keep the wounded or invalided man in the appropriate military hospital as an in-patient, so long as there was accommodation for him, and would include in the treatment appropriate manual curative treatment. After the man had been invalided out, or declared to be no longer fit for service, the War Office would keep him in hospital another three weeks. During that time facilities would be given to the representative of the local Statutory Committee to see the man and the hospital authorities. Generally speaking, those three weeks were intended as a jumping-off place within which arrangements might be made for the man's subsequent treatment. As soon as the man was invalided a card would be made out indicating the sort of treatment he needed. A duplicate of the card would be made, and one copy given to the man and one sent to the district in which he intended to reside. By these means the man would be saved from floating about the country without being in contact with any authority or body. The War Office also undertook to treat the man in his own district as an out-patient.

Mr Barnes passed in review with warm commendation the various voluntary agencies which had up to now befriended the disabled sailor and soldier: instancing St. Dunstan's Hostel, the Star and Garter Home, the Queen Mary Convalescent Hospitals at Roehampton, the Hospitals for Orthopædic Cases, the Scottish Red Cross, which dealt with the limbless men on the Clyde, the English Red Cross, and the Soldiers' and Sailors' Aid Society; and finally the War Pensions, &c., Statutory Committee. He then stated that he had sanctioned the setting up of a further Committee responsible to the Ministry of Pensions to deal in the first place with disabled soldiers requiring institutional treatment. This Committee was presided over by Colonel Sir A. Griffiths-Boscawen, Parliamentary Secretary to the Ministry of Pensions, and included Sir Walter Lawrence, representing the War Office, Mr. Cyril Jackson, vice-chairman of the Statutory Committee, and the Hon. Arthur Stanley, representing the British Red Cross. What is intended to be the relation of this new committee to the Statutory Committee itself Mr. Barnes did not state, but presumably the mechanism of the local Statutory Committees up and down the country will be utilised.

The Ministry intended, Mr. Barnes said, to provide new institutions for the disabled men and to make use of the material help, as well as the experience, of the Red Cross Society. One such institution had already been started for neurasthenics at Golders Green, London, N.W., and one for epileptics at Chalfont St. Giles, Bucks.

The difficulty in deciding on the allocation of the cost of dealing with the discharged war cripple between the State and the Approved Societies under the National Insurance Act had been met, he said, by an agreement that additional sickness should be a charge upon the State. Presumably this charge will also cover the added work thrown upon the panel practitioner, whatever this turns out to be in practice. The number of disabled men at present drawing pensions Mr. Barnes gave as 140,275, with an additional 65,000 or so medically unfit and 65,000 men in hospitals who had not yet reached the pension stage.

In the absence of military discipline after discharge from the Service, what pressure it was proposed to bring upon the disabled man to induce him to undergo proper treatment and training Mr. Barnes stated thus: The man who refuses treatment is to be fined half his pension; and the man who agrees to train for a new occupation is to be given full pension, full separation allowance for his wife, and have his special training fees paid for him.

Mr. Barnes dealt also with the question of the medically unfit, of whom he was told that 100,000 had been passed into the Army, describing them as "veritable weeds, who never should have been there at all." Some of them, he said, had concealed their ailments, and thousands had not done more than two or three days' service. As the State must assume some responsibility for them, he proposed to put these men back where the State had found them with a small gratuity on a scale which had been drawn up. In exceptional cases the gratuity would amount to £100.

Sir Henry Norman's Report on the Treatment and Training of Disabled and Discharged Soldiers in France.

The publication of the full text of Sir Henry Norman's report[2] has been delayed until the Ministry of Pensions Scheme was ready. Sir Henry Norman received a request on Sept. 21st last from Mr. Lloyd George, then Secretary of State for War, to report upon the French system and method of dealing with the problem of the medical treatment and training of disabled and discharged soldiers in France, both from the medical and administrative standpoints. The report as now printed begins with an account of the history and development of French administrative control, going on to describe in detail the principles of re-education of the war cripple and the means at disposal for carrying it out, and ending with suggestions regarding the treatment of disabled soldiers in the United Kingdom.

Sir Henry Norman describes the results of the French system of treating disablement as marvellous, and stated in the House of Commons on Tuesday that total disablement had almost ceased to exist in France. But he also fully realises the difficulty of voluntary re-education, saying:—

The difficulty is this. The Service of Health, which is part of the Ministry of War, deals, of course, only with soldiers. A man needing an artificial limb is sent to a centre of surgical equipment, which is always attached to a military hospital, and while receiving hospital treatment he may follow a course of re-education to fit him to return to his old trade or to take up a new one. This, however, is entirely voluntary; the best men gladly avail themselves of the opportunity, but a large number do not. These men, who often spend months in hospital, have the greater part of the day free; they are given leave, and spend their time sitting about the grounds or walking the streets, with results frequently disastrous to themselves. ..... The inability of the State to control a man after he is discharged from the Army constitutes a very difficult problem, which will have to be faced in both countries.

Mr. Barnes's scheme faces these difficulties, and, it is to be hoped, may afford a solution of them; but Sir Henry Norman regards the half measures proposed as unsatisfactory. He calls attention also to the long waiting list at Roehampton and the Military Orthopædic Hospital, Hammersmith. Further instruction may be derived from his characterisation of the strong and weak points of the French system:—

The strong points of the French system are the deep and universal sympathy felt for the disabled soldier; the national determination to do everything possible for him who has done so much for France; the keenness of all Ministers and officials to spare no effort and overlook no channel of usefulness; the readiness of Parliament to provide ample funds; the high scientific and specialist knowledge that is being devoted to the subject; and the desire that every part of France shall be prepared to offer to the disabled man the opportunity to return physically and intellectually re-equipped to civil life. All these things evoke one's profound admiration.

The weak points appear to be the absence of effective and authoritative coördination; the dispersion of precious effort along parallel and even conflicting lines; the rivalry of different Ministries, none of which is willing to be dispossessed of functions it has exercised for a long time and which it regards as of paramount national importance; the retention by the military authorities of some activities which appear essentially those of civil administration; the undecided conflicts of technical opinion; and the increased expenditure resulting from the foregoing situation.

[1] See THE LANCET, March 3rd, p. 344.

[2] H.M. Stationery Office. Price 4d.

HAWARDEN CASTLE HOSPITAL.—Mr. Henry Gladstone has lent Hawarden Castle to the War Office for use as a hospital for wounded officers. Accommodation will be provided for 250 patients.

WOUNDED ALLIES' RELIEF COMMITTEE.—Twenty-two large cases of drugs and other hospital requisites have been sent out for the relief of the Roumanian Army by the committee. The contents of ten of these cases came from the Wounded Allies Relief Branch of the Kensington War Hospital Supply Depôt, 176, Cromwell-road, S.W., and included, among other things, 10,590 assorted swabs, 6369 bandages of various kinds, and considerably over 200 splints.

THE WORK OF THE RED CROSS.—The annual report and statement of accounts of the British Red Cross Society and the Order of St. John for the year ending October, 1916, is a record of a vast field of beneficent labour. Specially noteworthy is the lowness of the administration expenditure. Including the work at home and in all the theatres of war, excluding hospitals, this amounted to £35,298, or 6·67*d.* for every sovereign received. The income for the year was £3 064 232, an increase of more than £1,000,000 on the previous year. The total expenditure in 1916 was £1,815,353, of which the following details are of interest:—

Transport of wounded naturally accounts for the largest single item of expenditure. On the purchase and equipment of ambulances, soup kitchens, cars, wagons, and cycles—of which the societies now have 2522 in all, mostly working abroad—£205,598 were spent. Working costs—upkeep and maintenance—amounted to another £182,111. Transport of wounded cost £23,000 less than in 1915 for personnel, largely because, with the growth of their organisation, the Army authorities have taken over certain of the former Red Cross activities. In all, 1829 of the societies' ambulances are working in France and Flanders, others being spread over Egypt, Saloniki, Mesopotamia, East Africa, Russia, Italy, and some 440 working at home.

Among their conclusions the committee state—

It is becoming increasingly necessary to determine the relative responsibilities of the Government and of organisations such as ours in this matter of the treatment and after-care of the men who have been disabled. The question is a very grave one, for such treatment must necessarily be continued for many years after the war. Its solution will depend in great measure on the pensions and allowances granted to disabled men, but to a still greater extent to the provision which the State may make for fitting these men, so far as possible, to take their part again in the civil work of the community.

The report can be obtained, price 1*s.*, from 83, Pall Mall, London, S.W.

The sale of gifts on behalf of the British Red Cross Society and the Order of St. John will be held on March 22nd and following days at Christie's Sale Rooms in King-street, St. James.

Medical News.

MEDICAL SICKNESS, ANNUITY AND LIFE ASSURANCE FRIENDLY SOCIETY.—The usual monthly committee meeting of this society was held on Feb. 16th, Dr. F. J. Allan being in the chair. The large number of claims arising from influenza during the previous month of necessity made the experience in excess of the expectation, but there is now a cessation of these claims, and appearances point to a possibility of a normal spring. For the first time for many years the half-pay experience of the society has been less than the expectation, and this is no doubt due to the more careful and rigorous medical examination that was enforced after the first year or two of the society's existence. After a period of inactivity of many years there has been introduced a new annuity table, which offers most facilities required for members desirous of obtaining deferred annuities. The society, therefore, now transacts the three forms of insurance for which it was originally founded, that is to say, sickness benefit during incapacity while a member is in active practice, annuity when this sickness benefit ceases, and life assurance to his representatives should he die. The annual report for 1916 was considered at this meeting and will be presented at the annual meeting of the members on March 27th. The society has laboured under more difficulties, it is thought, than any other insurance company; as dealing only with a specified profession, the majority of whose members are serving in H.M. Forces in various parts of the world, it is impossible to expect the normal increase in new business which would have been experienced in ordinary times. In spite of this the report, as a whole, is satisfactory. Applicants for sickness insurance are no longer limited in the amount for which they can insure, provided such amount does not exceed three-fourths of the average professional earnings, and this regulation is being taken advantage of by many of the existing members in view of the high rates prevailing for locum tenens and cost of living generally. All further information may be obtained from the secretary, Medical Sickness Society, 296, High Holborn, W.C.

Mr. W. Petersen has given £1000 to All Saints' Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, for the endowment of a bed in memory of his son, who was killed in action.

ASSOCIATION FOR PROMOTING THE TRAINING AND SUPPLY OF MIDWIVES.—The twelfth annual meeting of this association will be held at 9, Queen Anne-street, London, W., on Thursday, March 22nd, at 3.30 P.M. The chair will be taken by Major A. P. Luff, R.A.M.C. (T.), and an address on Midwifery and Government Subsidies given by Dr. George Reid, county medical officer of Staffordshire.

CHARITY ORGANISATION SOCIETY.—The third of a series of lectures organised by this society on social subjects will be held at 34, Queen Anne's-gate, S.W., by invitation of Lady Glenconner, on Wednesday, March 21st, at 3.30 P.M. The lecturer, Dr. F. N. K. Menzies, principal assistant medical officer, London County Council, will deal with the prevention of consumption. Questions and discussion are invited after these lectures.

MEDICAL MISSIONS IN CHINA.—A joint conference of the National Medical Association of China and the China Medical Missionary Association was held from Jan. 24th to 30th at Canton, under the joint chairmanship of Dr. W. H. Venable and Dr. Wu Lien Teh, the respective presidents of the two associations. Valuable papers were read dealing with the medical work of the various missions, public health, and education. In the course of the proceedings the foundation-stone of the new Kung Yee Medical College was laid.

THE MENTAL AFTER-CARE ASSOCIATION.—At the annual meeting of this association, held on March 1st under the chairmanship of the Lord Mayor, Dr. Henry Rayner submitted the annual report, showing a substantial increase in the number of patients dealt with as well as a satisfactory financial situation. From this it appeared that gratitude often took the form of a repayment, in part of least, to the association when the patient's outlook became brighter. During the past year applications on behalf of 508 persons were received—viz., 377 women, 131 men—33 per cent. more than in 1915. 630 visits had been paid and 154 situations found. 203 patients spent varying periods in cottage homes. A successful branch is in operation in Birmingham. Sir William Collins, M.P., in proposing the adoption of the report, described the association as the guide, philosopher, and friend of those who, happily recovered from their acute mental condition, sought to take their place in the world again. Sir D. Brynmôr Jones, who seconded the resolution, pointed out the useful place which the association filled, inasmuch as the discharge of a patient from an asylum did not necessarily imply immediate fitness to resume control of property or business without assistance.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL.—At the recent annual meeting of governors it was reported that there had been a large increase in the number of patients admitted to the wards in 1916—namely, 2075 as compared with 1817 in 1915—and 2053 had been attended at home by the hospital midwives. Of the in-patients 407, and of the out-patients 911, were the wives of sailors and soldiers. In order to cope with the increasing work of the ante-natal department, a new and temporary out-patient department has been opened adjoining the hospital, and a physician, Miss Frances M. Huxley, M.D., has been appointed in charge. An infant consultation centre is also being opened, and a physician, Miss Margaret G. Thackrah, M.D., has been appointed in charge. The number of emergency cases admitted, the report stated, had been greater than ever. Last year there were 183, many of them being admitted in a grave condition and suffering from severe complications. The work has been carried on under difficult conditions owing to shortage of nurses, but the training school has maintained its reputation, only one candidate having failed to pass the Central Midwives Board examination out of 113 candidates. The Ladies' Association continues to give valuable assistance. A strong appeal is being made for liberal support to enable the committee to pay off the balance, nearly £2000, of the accumulated debt and to meet the cost of maintenance during the current year.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Legislation on Venereal Disease.

LORD RHONDDA, the President of the Local Government Board, formally introduced in the House of Lords on March 6th a Bill to prohibit the treatment of venereal disease otherwise than by duly qualified medical practitioners, and to prevent the sale of quack remedies.

The text of the Bill is as follows:—

(1) In any area in which this Act is in operation, a person shall not, unless he is a duly qualified medical practitioner, for reward either direct or indirect, treat any person for venereal disease or prescribe any remedy therefor, or give any advice in connection with the treatment thereof, whether the advice is given to the person to be treated or to any other person.

(2) In any area in which this Act is in operation, a person shall not sell, offer for sale, supply, offer to supply, or dispense any drug or medicinal or other preparation as a remedy for venereal disease, unless the remedy is dispensed on and in accordance with the written prescription of a duly qualified medical practitioner, and is supplied for the use of the person for whom the remedy has been prescribed: Provided that nothing in this section shall affect (*a*) the sale or supply of any such drug or preparation by, or to, a duly qualified medical practitioner; or (*b*) the wholesale sale or supply of any such drug or preparation.

(3) If any person acts in contravention of any of the provisions of this section, he shall be liable on conviction on indictment to imprisonment, with or without hard labour, for a term not exceeding two years or on summary conviction to a fine not exceeding one hundred pounds, or to imprisonment with or without hard labour for a term not exceeding six months.

(4) In this Act the expression "venereal disease" means syphilis, gonorrhœa, or soft chancre, or any disease of the genito-urinary organs which may reasonably be suspected to be venereal disease.

The Act, if it becomes law, is to operate in any area to which it is applied by order of the Local Government Boards in the United Kingdom.

Criminal Law Amendment Bill.

A Grand Committee of the House of Commons began the detailed consideration of the Criminal Law Amendment Bill on March 6th. Having postponed the consideration of Clause 1 (punishment of acts of indecency with girls under 16), the Committee proceeded to deal with Clause 2, which prohibits under penalty sexual intercourse by a person suffering from venereal disease. The progress made with the consideration of the clause was not very great, and at the conclusion of the sitting the first subsection was still under examination. That subsection, as it was originally printed in the Bill, runs:—

A person who is suffering from venereal disease in a communicable form shall not have sexual intercourse with any other person or solicit or invite any other person to have such sexual intercourse.

An amendment was inserted in the subsection which provided that the person suffering from the disease should not only not have sexual intercourse with any other person, but should not "wilfully communicate such disease in any other manner to any person." Some discussion arose on the application of the penalties to solicitation by infected persons.—Answering Sir WILLIAM COLLINS, Sir GEORGE CAVE, the Home Secretary, said that he would ask the Committee to omit Subsection 3 from the Bill. That is the provision which runs:—

Where any person is convicted of any of the offences mentioned in the Schedule to this Act, the Court may, if they think fit, for the purpose of ascertaining whether that person is suffering from venereal disease in a communicable form, order that person to submit to such medical examination and tests as may be requisite for that purpose. If the person is a female, the examination and tests shall be conducted, if she so desires, by a female doctor.

He (the Home Secretary) thought that there were good reasons for inserting such a provision as this, but there was strong opposition to it. As it was thus shown to be controversial, he would not press for its insertion. The Committee left off its proceedings at this stage.

Pensions for Disabled Soldiers and their Dependents.

In the House of Commons on Tuesday a very detailed statement was made on the subject of pensions to disabled soldiers, and to soldiers' widows and dependents by Mr. BARNES, the Minister of Pensions.[1] One other point which Mr. BARNES touched on is interesting to the medical profession. Power is to be taken under the Royal Warrant to retain a penny in each half-crown from the pension of any widow for any benefit which the Government may devise. If a scheme of medical benefit is devised (Mr. BARNES said) this would enable the Government to place the 400,000 women and children under the doctors' supervision. He intimated that he would be glad to have the mind of the House on the matter.

[1] This statement is summarised on p. 393.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 28TH.

Health of Troops in East Africa.

Answering Mr. O'GRADY, Mr. MACPHERSON (Under Secretary for War) said: The composition of the East African Expeditionary Force has been varied from time to time according to the climatic and other conditions under which it was operating. It was long since recognised that in the event of the German forces retiring into the malarious south-eastern portions of their colony it would be desirable to reduce the number of white troops employed to a minimum. Steps were accordingly taken to provide coloured units to replace white. At the present moment the bulk of the white troops have been withdrawn or are in process of being withdrawn, whilst arrangements have been made to give other white units a period of rest and recuperation in a healthy climate. In regard to certain reports of the hardships undergone by the troops in East Africa which have gained currency, the following extract from a telegram from General Smuts may be of interest: "The complaints are exaggerated perversions of the admitted fact that the hardships have been unusually great in this campaign." The health and rationing of the troops and the provision of adequate transport, mechanical and other, is constantly engaging attention.

THURSDAY, MARCH 1ST.

The Health of the Army.

In the course of his speech introducing the Army Estimates, Mr. FORSTER (Financial Secretary to the War Office) said: While I am speaking of Mesopotamia, may I refer to a subject which engaged a deal great of attention last year—namely, the condition of the Medical Service. Since the estimates were introduced last year, the War Office has become directly responsible for the medical arrangements in that theatre of war. We have received frequent reports from the medical and sanitary authorities of that force. The Special Sanitary Committee made an exhaustive examination of the conditions existing there, and the general conditions now existing may be regarded as fully satisfactory. During the summer there was necessarily some considerable sickness, but the admission ratio has steadily diminished since then, and I think the health of the Army at present may be considered satisfactory. An abundant supply of nurses and other medical personnel has been furnished in hospitals for that area. These hospitals have recently been visited by a representative from the War Office, who reports that they are not unequal to any of the hospitals which we have at the other fronts. In France, Salonika, and Egypt the general condition of affairs is satisfactory. A great strain has at different times been put upon the medical resources in the various theatres of war, but the difficulties have been met. We have had to contend with a good deal of malaria in East Africa owing to the exceptionally unhealthy climatic conditions in which we have had to carry on our operations. I think nothing in this war is more striking than the triumph of science over disease, wholly upsetting the experience of former wars.

Enteric Fever.

One of the most remarkable phenomena is the almost total disappearance of enteric fever, that dread scourge which in former wars has decimated our armies even more effectually than the efforts of the enemy. This is the more surprising when one considers the vast numbers of men, their density on the ground, and the poisoned condition of the soil, especially in France. I think it will interest the House if I give the last weekly returns from the various fronts of the numbers in hospital suffering from typhoid. In France there are 4 cases, in Salonika 9, in Egypt 3, and in Mesopotamia 8, making a total of 24. The number of cases of typhoid fever amongst British troops in France up to Nov. 1st last year was 1684, paratyphoid 2534 and indefinite cases 353, a total of 4571 cases of the typhoid group of diseases. Compare that with what happened in South Africa. In South Africa there were nearly 60,000 cases admitted to hospital and 8227 deaths. And the army in France is infinitely larger than was the army in South Africa. The admission ratio for typhoid fever amongst the troops in France who have not been protected by inoculation is 15 times higher than amongst those who have been inoculated and the death ratio 70 times higher. I think that the narration of figures like these bears eloquent witness to the debt which we owe to the medical service.

Hospital Services.

At home during the past year (Mr. Forster proceeded) a system of convalescent hospitals, command depôts, and orthopædic hospitals has been developed and extended. Arrangements have been made with the Ministry of Pensions by which the problem of the training and treatment of the discharged soldier will be more effectively dealt with, and arrangements have been made to link up the treatment in the military hospitals with that afforded to discharged

soldiers on the out-patient system under the local committees of the Statutory Committee on War Pensions. The strain on the Medical Department in providing accommodation for the sick and wounded from the various fronts overseas has been very great, but we have received, and we continue to receive, the most valuable assistance from the voluntary hospitals which have been established throughout the country by persons to whom we are greatly indebted. The system of utilising the services of the members of the various Voluntary Aid Detachments has been highly successful. Those ladies serve abroad in large numbers and they are highly appreciated by members of the nursing profession. A system of Voluntary Aid hospitals has been invaluable in linking up the military medical system with the large number of sympathetic workers amongst the civil population, and I am glad to take this opportunity of saying how deeply indebted we are for the assistance we have received. The work of the British Red Cross Society is too well known to need any encomiums. The great resources of the society have been ungrudgingly placed at the disposal of the Medical Department on many occasions. A special committee has been recently established by that society, upon which are representatives both of the War Office and the Ministry of Pensions, for dealing with certain classes of disabled soldiers, such as neurasthenics, epileptics, and other cases requiring institutional treatment. This still further strengthens the link between the military hospitals and the civil institutions.

Venereal Disease.

I think it should be generally known that the venereal rate in the Army to-day is no higher than it is in ordinary times of peace. The absence of statistics for the general population in pre-war days renders it impossible to say whether the number of cases of venereal disease in the Army is higher than in a corresponding portion of the civil population of corresponding ages. We are making every effort to reduce the rate still lower. The National Council for the Control of Venereal Diseases has given us great assistance by providing lecturers specially chosen to lecture to troops in camps and barracks. These lectures have been largely attended and much appreciated.

Mr. TENNANT commented on the marvellous immunity of the Army from epidemic disease. "I think the House will agree," he added, "that the person more responsible than any other for the happy state of affairs is the Director-General of the Medical Services, Sir Alfred Keogh."

R.A.M.C. Territorial Officers.

Major WHELER drew attention to the position of the junior officers of the Royal Army Medical Corps Territorial Branch. He gave figures relating to their pay in comparison with that of regular and temporary officers of the R.A.M.C. Both as to pay and conditions of service the officers of the Territorial Branch were at a disadvantage, and their case was worthy of the consideration of the War Office.

Mr. MACPHERSON (Under Secretary for War) announced that the Secretary for War had appointed a committee to inquire into the various anomalies of promotion, not only in the Territorial Force, but in the New Armies. He had no doubt that the point raised by the honourable and gallant Member concerning the Territorial R.A.M.C. men would be included in the terms of reference.

Military Medical Boards and Classification of Recruits.

Mr. NIELD moved—

That, in the opinion of this House, the classification of recruits for the Army by military medical boards, particularly of men who have been previously examined upon attestation under the Derby scheme and rejected as unfit, has been productive of great and unnecessary hardship as well as expense by reason of the large number of such men, while undergoing training, being found unable to perform the military work required of them in the class to which they have been assigned, whereby they have had to be sent for hospital treatment and have occupied accommodation and medical attendance urgently required for returned wounded men; and this House is of opinion that an inquiry is urgently needed to alter and standardise these medical examinations and to ascertain the extent to which hospital accommodation and expense has been expended which with proper care might have been avoided.

The honourable Member said that great waste was taking place in hospitals because men who were taken into the Army and had been unable to stand the strain of training had been relegated to hospitals and filled beds which were urgently wanted for wounded men. There was also the waste of man power occasioned by withdrawing men from civil occupations when they ought to be left in them. All over the country medical boards refused to re-examine attested men. The honourable gentleman went into great detail in individual cases, which, he said, showed laxity of the medical authorities under the tribunals scheme. He had a list of men who had been passed in certain categories in a way which no possible system could justify. He called particular attention to the case of men who were suffering from gastric trouble. He also referred to the careless way in which he said some medical examinations were conducted.

Mr. SNOWDEN seconded.

Mr. MACPHERSON, in replying, said a million and a half men had probably been examined in a comparatively short time. It would have been exceedingly surprising if out of such a large number some mistakes had not been made. One per cent. of the number would amount to 15,000 cases, and he thought it might be safely said that mistakes had not been made in greater number than that. In fact, probably a less number had been made. Of course, to get out accurate statistics would cost an enormous amount of time and expense, but he was sure it would be found not only that the mistakes had been small in number, but, on the whole, recruiting medical boards had done extraordinarily well. The suggestion which pervaded the speeches of the two honourable members was that the military doctors were responsible. As a matter of fact, the boards in the main were composed of civilian practitioners belonging to the Territorial Force and the Special Reserve. He had taken 63 medical boards and had found that the proportion of civilian to military doctors was as two to one, and the proportion of civilian to military doctors would work out at a very much higher rate if it were not necessary to have a medical man of military experience as president of the Board. He must, therefore, deny that the R.A.M.C. doctors were responsible.

Mr. SNOWDEN: I did not make that suggestion.

Mr. MACPHERSON went on to say that it had been stated that the medical men were receiving secret instructions from the War Office. That was rather a monstrous charge to make. They were professional men and in a great many cases were men of very high professional and social reputation. He could not imagine medical men of that status and character accepting secret instructions of any sort. He had a greater faith in the British medical practitioner. At the head of these boards was a distinguished practitioner, Colonel James Galloway. He was the man who was responsible for the conduct of the boards and his qualifications, as the House would appreciate, were very high. To suggest that he was in any way responsible for secret instructions to boards was stretching common-sense. The point had also been made that the re-examination of attested men was very unsatisfactory. There, again, when they were dealing with a specific case it was almost impossible to answer. In recent statistics he found in the time covered by the opening period of this year that in a total of 2000 only 13 broke down in training. This was certainly not a high percentage when the different classes from which the men were drawn and the training that was undergone were considered. He would engage to make all inquiries in the cases that had been submitted to him.

Mr. NIELD: Will the honourable gentleman regard gastric cases as a class apart and give special directions?

Mr. MACPHERSON: I will bring the cases mentioned before the proper authority.

The motion was withdrawn.

MONDAY, MARCH 5TH.

Payments to Panel Practitioners.

Mr. CHANCELLOR asked the representative of the National Health Insurance Commissioners whether he was aware that certain Insurance Committees declined to pay the balances due to practitioners in respect of the year 1915 unless a special form of receipt and discharge was signed; and whether, as these moneys were payable unconditionally, he would take steps to see that the doctors concerned should receive equitable treatment and thus, by assuaging irritation, lighten their burdens during the pressure of work consequent upon the depletion of their numbers through enlistment.—Sir E. CORNWALL replied: No particular form of receipt has been prescribed by the Commissioners, but I shall be glad to consider in any particular case which my honourable friend has in mind any proposals in this direction calculated to remove irritation or lighten the pressure of work falling upon medical men, especially in view of the depletion of their numbers.

Brandy for Hospitals.

Sir G. TOUCHE asked the representative of the Treasury whether he was aware that the application of the restrictions governing the withdrawal of spirits from bond was resulting in hardship in the case of hospitals, both military and civil, on account of the inability of retailers to supply the small quantities of brandy necessary for their consumption due to their inability to show an average, owing to their varying needs which were dependent on the nature of the cases under treatment, and that representations made on behalf of the Great Northern Central Hospital to the Customs authorities pointing out that their consumption was two gallons every ten days, that they were now using their last two gallons, and that their suppliers were unable to withdraw a further quantity from bond, only resulted in a promise to place the subject before the Board

with a view to an inquiry being held and a statement that some weeks might elapse before a decision was arrived at; and, in view of the fact that the application of the restrictions in such cases could not be in the public interest, and having regard to the necessity for the maintenance of an adequate supply of brandy for use in the treatment of wounded soldiers, would he take such steps as would procure a modification of the regulations in so far as they governed the supply of brandy to hospitals.—Mr. BALDWIN wrote in reply: The Board of Customs and Excise informs me that, while they can identify the case referred to, they had no knowledge that the situation was as described in the question. No representations have been made to them by the hospitals as to the effect upon them of the present regulations, but they are inquiring further into the case of this hospital.

TUESDAY, MARCH 6TH.

American Medical Men.

Answering Mr. R. LAMBERT, who asked whether the Army Medical Department would relax the rule which deprived them of the services of medical men holding American degrees, Mr. MACPHERSON (Under Secretary for War) said: The War Office is in constant touch with members of the medical profession. Duly qualified American doctors are being employed.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DUNCAN, D., M.B., C.M. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Chester-le-Street District of the county of Durham.

DYSON, WILLIAM, M.D. Vict., Dermatologist to the Salford Royal Hospital; GIBSON, ROBERT, M.D., Ch.B., to hold the office *pro tem.*

MACALPINE, J. BARLOW, M.B., Ch.B. Vict., F.R.C.S. Eng., to take charge of the Genito-Urinary Department at the Royal Salford Hospital.

MACDONALD, M., M.D. Glasg., Acting Medical Officer of Health *pro tem.* to the Deptford Borough Council.

MAILLINICK, S., M.R.C.S. Eng., L.R.C.P. Lond., Assistant Tuberculosis Officer for the Cardigan and Middleton-in-Wharfedale Sanatoria.

OLIPHANT, F. B., M.B., C.M. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Bridport District of the county of Dorset.

SMITH, F. L., M.D. Durh., Medical Officer of the Grimoldby District of Louth.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASHTON-UNDER-LYNE, LANCS, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—Assistant House Surgeon. Salary £160 per annum, with usual emoluments.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Female House Surgeon. Salary £200 per annum.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Surgeon. Salary £150 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURNLEY UNION.—Resident Assistant Medical Officer. Salary £250 per annum, with rations, &c.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £160 per annum, with board, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

CAMBRIDGE, COUNTY MENTAL HOSPITAL.—First Assistant Medical Officer. Also Junior (Second) Assistant Medical Officer, unmarried. Salaries £300 and £200 respectively, with board, &c.

CARLISLE, CUMBERLAND INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Surgeon. Salary £200 per annum, with board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant House Surgeon, unmarried. Salary £150 per annum, with board, &c.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Second Female Resident Medical Officer. Salary £200 per annum, with board, &c.

LIVERPOOL, BROWNLOW HILL INSTITUTION.—Resident Assistant Medical Officer. Salary at rate of £300 per annum, with rations, &c.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Senior House Surgeon. Salary £250–£300 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with board, &c.

NEWCASTLE UPON-TYNE EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

OLDHAM ROYAL INFIRMARY.—Second House Surgeon. Salary £250 per annum. Also Third House Surgeon. Salary £200 per annum. With board, &c.

PETERBOROUGH INFIRMARY.—House Surgeon. Salary £150 per annum for first six months, £200 after, with board, &c.

PORTSMOUTH ROYAL HOSPITAL.—House Surgeon for six months. Salary £250 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford.—House Surgeon. Also Casualty Officer.

READING, ROYAL BERKSHIRE HOSPITAL.—House Surgeon for six months. Salary £250 per annum, with board, &c.

ST. GEORGE'S HOSPITAL, Hyde Park Corner, S.W.—Lecturer on Mental Diseases.

SALFORD ROYAL HOSPITAL.—Junior House Surgeon. Salary at rate of £150 per annum, with board, &c.

SOUTHAMPTON BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer. Salary £300 per annum, with board, &c.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician and Junior House Surgeon. Salaries £150 and £120 per annum respectively, with board, &c.

SUNDERLAND ROYAL INFIRMARY.—Female House Surgeons. Salaries—Senior, £250; Junior, £200 per annum, with board, &c.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior and Junior House Surgeons. Salary £200 and £150 per annum respectively, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Gravesend.

Births, Marriages, and Deaths.

BIRTHS.

COWEN.—On March 1st, at Imperial-terrace, Blackpool, the wife of Captain E. G. H. Cowen, R.A.M.C., of a son.

DICKSON.—On March 4th, at Nelson Place, Newcastle, Staffordshire, the wife of Robert H. Dickson, F.R.C.S.—a son.

FITZGERALD.—On March 1st, at St. Margaret's, Ashburnham-gardens, Eastbourne, the wife of Captain R. Desmond FitzGerald, R.A.M.C., of a son.

GARDNER.—On March 2nd, at Albert-road, Whalley Range, Manchester, Muriel, wife of Lieutenant A. Linton Gardner, R.A.M.C., of Watersmeet, Ilfracombe, of a son.

JOHN.—On Feb. 25th, at "Tandderwen," Old Colwyn, to Katharine (*née* Spencer), the wife of Captain R. B. John, R.A.M.C.—a son.

MARRIAGES.

CADDELL—WHELAN.—On Feb. 22nd, at the Chapel Royal, Savoy, Captain (Acting Lieutenant-Colonel) E. D. Caddell, M.B., M.C., R.A.M.C., to Margaret Frances, only daughter of Mr. and Mrs. C. Pratt Whelan, Ailesbury-road, Dublin, and Rochfort, Greystones, Co. Wicklow.

FARNFIELD—WINDSOR-WATSON.—On Wednesday, March 7th, 1917, at All Souls', Hastings, by the Rev. H. Collinson, B.A., John Stewart Farnfield, M.R.C.S., L.R.C.P., London, to Annabel Windsor-Watson, widow of John Watson, solicitor, Liverpool.

DEATHS.

MAJOR HARRY PIKE, M.R.C.S., L.S.A., M.D. St. And., aged 80 years (retired), Justice of the Peace for Berks.

POYNTZ-WRIGHT.—On Feb. 25th, at St. Neots, Thomas Poyntz-Wright, M.R.C.S.E., L.S.A. Lond., for 30 years M.O.H. for St. Neots and District, in his 80th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, J. B., ET FILS, Paris.
La Pratique Chirurgicale dans la Zone de l'Avant. Par le Médecin Inspecteur Général Mignon, Médecin d'Armée le Dr. Billet, Professeur agrégé au Val-de-Grâce, et le Dr. Henri Martin, chargé de la réunion des documents photographiques. 10 fr.

BOERICKE AND TAFEL, 1011, Arch-street, Philadelphia, Pa.
Clinical Gynecology. By James C. Wood, A.M., M.D., F.A.C.S., &c. $2.00 net.

CHURCHILL, J. AND A., London.
Minor Surgery and Bandaging (Heath, Pollard). Sixteenth edition. By H. Morriston Davies, M.D., M.C. Cantab., F.R.C.S. 8*s.* 6*d.* net.

LEA AND FEBIGER, Philadelphia and New York.
Syphilis. By Loyd Thompson, Ph.B., M.D. $4.25.

LONGMANS, GREEN, AND CO., London.
Physiology of Food and Economy in Diet. By W. M. Bayliss, M.A., D.Sc. Oxon., F.R.S., &c. 2*s.* net.
Non-Flesh Recipes. By Margaret Blatch, M.C.A. Second edition. 1*s.* 6*d.* net.

MASSON ET CIE, Paris.
Localisation et Extraction des Projectiles. Par Ombrédanne, Professeur agrégé à la Faculté de Paris, et Ledoux-Lebard, Chef de Laboratoire de Radiologie des Hôpitaux de Paris. 4 fr.
Traitement des Fractures. Tome II.: Fractures Diaphysaires. Par R. Leriche, Professeur agrégé à la Faculté de Lyon. 4 fr.
La Prothèse des Amputés. Par A. Broca, Professeur à la Faculté de Médecine de Paris, et Ducroquet, Chirurgien à l'Hôpital Rothschild. 4 fr.
La Syphilis et l'Armée. Par G. Thibierge, médecin de l'Hôpital Saint-Louis. 4 fr.
Hystérie-Pithiatisme et Troubles nerveux d'ordre réflexe. Par J. Babinski, Membre de l'Académie de Médecine, et J. Froment, agrégé, Médecin des Hôpitaux de Lyon. 4 fr.

Notes, Short Comments, and Answers to Correspondents.

FERNS AS A SOURCE OF STARCH.

To the Editor of THE LANCET.

SIR,—With reference to the annotation in THE LANCET of Feb. 24th and Professor A. E. Shipley's suggestion regarding the use of the rootstock of the common brake (*Pteris aquilina*) as a possible source of starch for food and industry, there seems to be some doubt as to its capabilities in these directions, judging by the remarks of various writers. The best account I have been able to find is in "The Ferns of Great Britain, &c.," by Anne Pratt (Mrs. John Pearless in 1866), as follows:—

> The ancients are supposed to have used both the fronds and stems of the Brake in diet-drinks, and medicines for many disorders have, at various times, been made in our country from this fern. It is very astringent, and has been recommended for dressing and preparing kid and chamois leather; while both in this and other lands the ashes, from the alkali which they contain, were found serviceable in the manufacture of soap and glass until discoveries in chemistry suggested the use of other materials for the purpose. This very astringency seems to render the Brake unsuitable for the food of man, though some writers think that nutriment would be afforded by its large rhizome. This is often ground to powder and mixed with the flour in bread eaten in some parts of Normandy; but, perhaps, like the admixture of pine bark with the flour used in some countries in the north of Europe, it adds rather to the quantity than to the nutritious quality of the bread. The rootstock of this brake, however, as we are informed by Humboldt, serves the inhabitants of Palma and Gomera, in the Canary Islands, for food. They grind it, he says, to powder and mix it with a small quantity of barley-meal. This composition is termed *gofio;* and the author adds that the use of so homely a diet is a proof of the extreme poverty of the people of these islands. This naturalist saw both the Brake and our common Northern Hard Fern growing in the Canaries in great luxuriance, though never attaining the size or stateliness of the arborescent forms of Equinoctial America. Tree ferns frequently afford food to the natives of the lands in which they are found. Dr. Joseph Hooker, in his recent "Himalayan Journal," says that ferns are more commonly used for food than is supposed. He tells us that both in Sikhim and Nepal the watery tubers of an *Aspidium* are eaten. So, also, the pulp of one tree-fern affords food, but only in times of scarcity, as does that of another species in New Zealand. *Cyathea medullaria.* Their pith is composed of a coarse sago—that is to say, of cellular tissue with starch granules. The Esculent Brake (*Pteris esculenta*), a fern very similar to our Bracken, is a very troublesome plant to the agriculturist in his attempt to clear the land in New Zealand, and Polack calls it "the interminable fern-root." The rootstock is much used by the natives as food, as it is also in the Society Islands and in Australia, where it is the most extensively diffused edible root. In the latter country this plant is called *Tara* by the aborigines, a name which in the southern hemisphere is given to several roots which are eaten, and also to rice. Mr. Backhouse shared, with some of the natives of Australia, the meal made of the inner portion of the upper parts of a tree fern. He says that it was too astringent to be agreeable to his palate, and little improved by cooking, but that it was something like a Swedish turnip in substance.

The fronds have been used in the manufacture of beer and are still used as packing material for fruit, keeping it fresh and cool and imparting neither colour nor flavour; but in the "Diary of Henry Machyn, Merchant Taylor of London," written in 1552, we read of a wicked man who was placed in the "pelere" for "selling potts of straberries, the whych the pott was not aiff fulle, but filled with forne."

I am, Sir, yours faithfully,

London, March 3rd, 1917. PTERIS.

PRUDENTIAL ASSURANCE COMPANY, LIMITED.

THIS company has just issued its sixty-eighth annual report for the year ending Dec. 31st, 1916. The assets of the company in all branches as shown in the balance-sheet are £99,123,746, being an increase of £4,328,948 over those of 1915. Of these assets over £17,750,000 are in British Government securities; this represents an increase compared with last year of about £4,500,000. During the year the company has lent or sold to the Treasury under the various mobilisation schemes securities of a nominal value of £6,955,159, and in the same time the Government has continuously availed itself of the services of the company and its officials, and the report states that it has been a matter for congratulation that the services so rendered have met with the greatest appreciation. The indoor and outdoor staffs have been further depleted during the year by naval and military demands, and the company is now supplying more than 10,000 men to the fighting strength of the nation. The directors record their admiration of the spirit with which the staff, male and female, have carried on the business of the company, a task which the war has rendered difficult of accomplishment. The Prudential Voluntary Aid Detachments of the Red Cross Society have continued their work throughout the year; the number of casualties met at the various railway stations and conveyed to London homes and hospitals have now reached a total of 156,000. Two motor ambulances were purchased by the voluntary subscriptions of the outdoor staff of the company and presented to the Red Cross, and a motor omnibus was presented by Mr. Thomas Wharrie, whose death, after 24 years' continuous service on the board, the directors deplore. The board propose to fill the vacancy by the appointment of Mr. Alfred Corderoy Thompson, who has served the company for nearly 45 years and who has held the office of manager since 1907. The directors desire that he should retain his present office of general manager, which will necessitate an alteration in the articles of association of the company. The war claims during the year in both the ordinary and industrial branches number 52,433, and amount to £1,077,568. The total paid up to the present on this account since the outbreak of war exceeds £1,860,000 in respect of over 88,000 claims. The strain imposed upon the company by the operation of the Courts (Emergency Powers) Act and the necessity of reserving funds to meet the liabilities which this Act creates and other strains owing to war have reduced the surplus shown on the financial operations of the year, and profit-sharing schemes have either had to be temporarily suspended or modified. Mr. J. Burn, actuary, in his valuation report states that the war claims of the year have been very heavy, the amount paid in the industrial branch being almost double that paid in the previous year. He also emphasises the strain imposed by the Act referred to as "a severe burden upon the company's resources."

THE PRICE OF FISH.

To the Editor of THE LANCET.

SIR,—I do not propose to comment on the price of fish generally, but to compare the values and prices of two favourites with many less wealthy folk. These favourites are bloaters and fresh herrings and, on Sundays especially, winkles (if a winkle is a *fish*, a point which I seem to recollect a learned judge could not decide; to some it is a contemptible sea-snail). Winkles are now in London 4*d.* a pint (except in the very poorest districts, where they are 2½*d.*). I bought a pint and obtained 154 shells, weighing 19 oz. The empty shells weighed 15¼ oz. and the actual winkles 3¾ oz. This equals 1*s.* 5*d.* per pound for winkles, or just over 1*d.* an ounce. (Before the war winkles in shells were 2*d.* a pint, equal to 8½*d.* a pound for the yield.) I bought two bloaters costing the same money as the winkles, 4*d.* (2*d.* each). They weighed, with heads on, 10¼ oz., and without heads 8½ oz. This equals 7½*d.* a pound for bloaters. I also bought two fresh herrings costing the same money, 4*d.* (2*d.* each). They weighed with heads on 9¾ oz., and without heads 8 oz. This equals 8*d.* a pound, or ½*d.* an ounce. Winkles are therefore proved to be double the price of bloaters or herrings, if considered as *food*. Some people may argue that they are a *relish* used in place of jam, but plum jam is 8*d.* a pound and strawberry 10½*d.*, as against 1*s.* 5*d.* for winkles, which even at the lowest price, 2½*d.* a pint, now current, work out at 11*d.* a pound. Sixty-five years ago a Fellow of the Statistical Society (Mr. Braithwaite Poole) estimated that Billingsgate Market sold in a year 304,000,000 winkles, weighing 1900 tons, with a value of £15,000. Food experts have ignored the winkle (and the cockle) as of little account as food, but that was when plenty reigned.

I am, Sir, yours faithfully,

March 3rd, 1917. OBSERVER.

FALKLAND ISLANDS.

THE Blue-Book of this colony for 1915 gives the estimated population as 3451—2519 males and 932 females. The birth-rate per 1000 during the year was 13·37 and the death-rate 8·13. The general health was good on the whole, but that of the workmen imported into Stanley from England for special work was less satisfactory, the chief illnesses among them being bronchitis, rheumatism, and enteritis; many cases of the last were probably due to excessive meat-eating, to which the majority of the men were not accustomed. An epidemic of a peculiar kind occurred during July, August, and September and resulted in five deaths; the symptoms simulated very closely those of beri-beri; no cases occurred in Stanley. The King Edward VII. Memorial Hospital was opened as a civil hospital in May; 21 cases were admitted to the institution during the year.

POTATOES.

To the Editor of THE LANCET.

SIR,—With reference to Captain Bathurst's warning in the House of Commons yesterday that there will probably be no potatoes at all for sale during the late spring and early summer, and his added appeal to those able to buy more expensive substitutes to do so at once, and thus to make the supply last longer for their poorer brethren, may I recommend the following method to make the potatoes go further and to comply with the appeal: Boil two or three tablespoonfuls of ordinary rice (in a cloth preferably, in order not to make the rice too watery, allowing

room in the cloth for the expansion of the rice grains) about an hour before one pound of potatoes are put on to cook. When the potatoes are boiled, mash them, and add the rice which has been boiled soft, and mix well together. Three people out of four who were served with this mixture did not know until afterwards that they had not eaten solely mashed potatoes. 3d. a pound was paid for the rice, which was of the small variety, but nice and white. Not much rice to the pound of potatoes is required, as the rice grains swell up considerably. Personally I can recommend it.

I am, Sir, yours faithfully,

London, March 6th, 1917. W.

THE STICK CRUTCH FUND.

A DEPÔT of this Fund has been opened at 30, Regent-street, W., for supplying, free of charge, stick crutches to wounded soldiers discharged from the Army. The office is open from 11 A.M. to 4 P.M. each week-day with the exception of Saturdays.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, March 13th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 4.30 P.M.

Communications:

Dr. Laura Foster: Histological Examination of the Ovaries in 100 Cases of Mental Disease and Normal Controls.

Staff-Surgeon M. Kojima, I.J.N.: Studies on Endocrine Organs of Dementia Præcox.

(Communicated by Major F. W. Mott, who will demonstrate the histological observations.)

Wednesday, March 14th.

SURGERY (Hon. Secretaries—Raymond Johnson, V. Warren Low): at 5.30 P.M.

Paper:

Major Jocelyn Swan: The Treatment of Severely Infected Gunshot Fractures involving the Joints of the Upper Extremity: Early Excision with the object of obtaining Mobility (with epidiascope demonstration of radiograms, &c.).

Thursday, March 15th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac): at 5 P.M.

Cases (at 4.30 P.M.).

Dr. Pernet: (1) A Case of Morvan's Disease (Syringomyelia); (2) A Case of Elephantiasis of the finger; (3) A Case of Nævus of the temple,; And other cases.

Friday, March 16th.

ELECTRO-THERAPEUTICS (Hon. Secretaries—E. P. Cumberbatch, R. Knox): at 8.30 P.M.

Address:

Professor W. M. Bayliss, F.R.S.: The Origin of the Electric Currents led off from the Human Body.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Paper:—Major Sir Robert Armstrong-Jones, R.A.M.C.: The Psychology of Fear and the Effects of Panic Fear in War Time.

HUNTERIAN SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY.—9 P.M., Paper:—Mr. C. Heath: Diagnosis and Treatment in Otitis Media.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Lumleian Lectures:—Dr. G. A. Sutherland: Modern Aspects of Heart Disease. (Lectures I. and II.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. H. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks), Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. H. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY.—4 P.M., Lecture IX.:—Dr. E. L. Collis: The Protection of the Health of Munition Workers. Dr. H. M. Vernon, Mrs. H. J. Tennant, and Mr. G. Bellhouse have promised to take part in the discussion.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

MANAGER'S NOTICES.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1916 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers (inland edition) are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 4*d.*

To be obtained on application to the Manager, accompanied by remittance.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the new year, the price was raised to 8*d.* The rates of subscription remain as revised in October.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 6.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Mar. 7th, 1917.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Tem.	Wet Bulb.	Dry Bulb.	Remarks.
Mar. 1	...	51	47	41	41	42	Overcast
,, 2	...	47	43	41	40	41	Overcast
,, 3	0·05	55	40	35	35	36	Overcast
,, 4	0·15	64	44	33	33	35	Cloudy
,, 5	0·03	42	41	34	34	34	Snowing
,, 6	...	53	43	34	37	37	Overcast
,, 7	...	62	35	31	30	31	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c. have been received:—Annales de Médecine, Revista da Medicina, Asylum News, Tropical Diseases Bulletin, Indian Medical Journal, Practitioner, Edinburgh Medical Journal, Calcutta Medical Journal, American Journal of Surgery, Brain, Annali d' Igiene, American Medicine, British Dental Journal, Dublin Journal of Medical Science, Dominion Medical Monthly.

Communications, Letters, &c., have been received from

A.—Dr. W. F. Annand, Coventry; Messrs. Armour and Co., Lond.; Dr. D. B. Anklesaria, Ahmedabad; Armenian Red Cross Refugee Fund, Lond., Hon. Sec. of, A. G.; Capt. J. E. Adams, R.A.M.C.(T.) Lieut.-Col. W. Alpin, I.M.S.; Messrs. Adlard and Son, and West and Newman, Lond.; *American Journal of Electro-therapeutics and Radiology*, New York, Business Manager of.

B.—Dr. H. A. Bosma, Falmouth; Surg. H. C. Boothurst, R.N.; British and Foreign Sailors Society, Lond.; Dr. A. Burrows, Lond.; Dr. Bourguet, Toulouse; Major T. W. Buckley; Messrs. Butterworth and Co., Lond; Messrs. Barford and Perkins, Peterborough; Capt. A. Barr A.V.C.; Miss R. S. V. Brown, Lond.; Messrs. Bouveau and Chevillet, Paris; Dr. E. Bramwell, Edinburgh; Mr. F. F. Burghard, C.B., Lond.; Messrs. W. H. Bailey and Son, Lond., Burnley Guardians, Clerk to the; Mr. J. E. Burton Runcorn; Mr. D. M. Bell, Pelham Manor; Dr. B. M. Brockbank, Manchester; Mr. E. Bougault, Paris; Bedford County Hospital, Bedford, Sec. of.

C.—Dr. W. M. Crofton, Dublin; Messrs. Cassell and Co., Lond.; Chesterfield Hospital, Sec. of; Dr. E. A. Constable, Lond; Dr. G. A. Crace-Calvert, Ruthin; Cumberland Infirmary, Carlisle, Sec. of; Dr. H. Campbell, Lond.; The Camera Club, Lond., Sec. of; Dr. W. H. L. Copland, Lond.; Charity Organisation Society, Lond., Chief Organising Sec. of; Dr. E. M. Corner, Lond; Casein, Ltd., Lond., Managing Director of; Committee concerning Causes of Death and Invalidity in the Commonwealth, Melbourne, Chairman of; Messrs. Clement and Johnson, Lond.; Messrs. J. and A. Churchill, Lond.; Messrs. Carnrick and Co., Lond. Lieut.-Col. J. W. Cornwall, I.M.S.

D.—Mr. H. Daragon, Paris; Messrs W. Dawson and Sons, Lond.; Libreria Detken and Rochol, Naples; Daimler Co., Coventry; Prof. H. R. Dean, Manchester; Mr. A. H. Drew, Lond.; Mr. H. Dickinson, Lond.; Department of Agriculture, &c., Dublin, Chief Inspector of; Denver Chemical Manufacturing Co., Lond.

E.—Mr. W. Easton, Jedburgh; Dr. H. A. Ellis, Middlesbrough; Lieut.-Col. R. H. Elliot, I.M.S.

F.—Dr. W. M. Fletcher, Lond.; Messrs. W. and G. Foyle, Lond.; Tempy. Col. A. Fuller-ton, A.M.S.; Mr. C. F. Forshaw, Bradford; Mr. P. H. Fisk, Ipswich; Dr. P. Fildes, Haslar; Mr. C. Foley, Liverpool.

G.—Mr. W. St. D. Griffith, Lond.; Messrs. A. H. Grantham and Co., Reading; Miss K. Gibson, Lond.; Galen Manufacturing Co., Lond.; Capt. W. J. G. Gayton, R.A.M.C., Fleet-Surg. W. H. O. Garde; Mr. J. J. Grave, Lond.

H.—Surg. P. G. E. Hill, Lond.; Hunterian Society, Lond., Mr. H. B. Hill, Lond.; Messrs. C. J. Hewlett and Son, Lond.; Hoffmann-La Roche Chemical Works, Lond.; Dr. V. D. Harris, Milford-on-Sea; Dr. H. R. Harrower, Glendale, California; Messrs. A. Heywood and Son, Manchester; Dr. W. J. Howarth, Lond. Mr. P. A. Hocking, Lond.; Mr. J. T. Hyatt, Shepton Mallet; Staff-Surg. F. G. Hitch, R.N.; Dr. G. M. Harston, Lond.; Capt. G. M. Huggins, R.A.M.C.

I.—Capt. A. C. Inman, R.A.M.C.; Institute for Medical Research, Kuala Lumpur, F.M.S., Director of.

J.—Jeyes' Sanitary Compounds Co., Lond., Sec. of; Messrs. Frank Jackson and Co., Lond.; Mr. R. T. Jones, Harlech; Mr. L. de Jonquières, Lond.; Dr. P. Wood Jones, Lond.; *Journal of Incorporated Society of Trained Masseuses*, Lond., Editor of.

K.—Messrs. H. S. King and Co., Lond., Dr. M. Kamil, Cairo; Messrs. G. Kelly and Co., Lond.; Messrs. T. Kerfoot and Co., Bardsley Vale; Kurnool, India, Acting District Medical and Sanitary Officer of; Kolynos Incorporated Lond.; King's College Hospital Medical School, Lond., Sec. of; Dr. A. Kinsey-Morgan, Bournemouth; Dr. C. N. Kelynack, Lond.

L.—Dr. C. E. Lea, Manchester; Dr. R. B. Low, Lond., Messrs. Longmans, Green and Co., Lond.; Leeds Public Dispensary, Sec. of; Messrs. H. K. Lewis and Co., Lond.; Dr. T. D. Lister, Lond.; Local Government Board, Lond.; Sec. of; Liverpool Corporation, Supt. of Stationery of, Surg.; General Sir C. P. Lukis, I.M.S.; Liverpool Guardians, Clerk to the, Mr. C. E. Lisle, Birmingham; Messrs. Lever Bros., Port Sunlight.

M.—Mr. C. A. Mayne, Dundee; Dr. Gladys Montgomery, Glasgow; *Medical Review*, Lond.; Mr. M. Moffatt, Weston-super-Mare; Madras and Southern Mahratta Railway Co., Rayapuram, Chief Medical Officer of; Messrs. Chas. Moore and Co., Lymm; Mysore Government, Bangalore, Senior Surg. of; Dr. M. B. Machhar, Mirpur-Sakro; Dr. A. T. MacConkey, Elstree; Capt. A. C. Major, R.A.M.C., *Midland Counties Herald*, Birmingham; Dr. R. Morton, Lond.; Surg.-Gen. Sir Geo. H. Makins, A.M.S., K.C.M.G., C.B.; Messrs. C. Mitchell and Co., Lond.; Mr. W. E. Mayne, Belfast; Mount Vernon Hospital for Consumption, Northwood, Medical Supt. of; M. S. G.; Messrs. Mathie, MacLuckie, and Lupton, Stirling; Modern Hospital Publishing Co., St. Louis, President of; Mr. T. F. Manning, Lond.; Mr. J. McGinn, Newport, Mon.; Messrs. J. Menzies and Co., Glasgow; Messrs. E. Morley and Sons, Leeds.

N.—Miss F. Nicholson, Leicester; New Hospital for Women, Lond.; Newspaper Society, Lond., Sec. of.

O.—Oldham Royal Infirmary, Sec. of; Dr. J. S. Owens, Lond.

P.—Mr. B. S. Pierrepoint, Lond.; Mr. G. R. Peterson, Saskatoon; Peterborough Infirmary, Sec. of; Mr. W. G. Plimmer, Lond.; Major W. Pearson, R.A.M.C.; Mr. V. G. Plarr, Lond.; Capt. J. L. Perceval, R.A.M.C.(S.R.), Messrs. Parke, Davis and Co., Lond.

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